Access DB# 75776

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Laura Weiner Examiner #: 71724 Date: 9-18-02
Art Unit: 1745 Phone Number 308-4396 Serial Number: 09/710,495
Mail Box and Bldg/Room Location: CP3/C10 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ______

Inventors (please provide full names): ______ 18

Earliest Priority Filing Date: ______

For Sequence Searches Only ***Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.***

Please have done by next Wednesday, Kurt

I Search for a negative material comprising
a) a negative active material &
b) compound (additive) which is a nitride, sulfide, chloride or fluoride compound & also contains a transition metal or alkaline metal or alkaline earth metal (see claims for more details)

II Search for a negative material comprising
a) negative active material &
b) a compound with calcium oxide [illegible] [illegible]
[illegible]

****

STAFF USE ONLY

Searcher:	K. Fuller	**Type of Search**		**Vendors and cost where applicable**	
Searcher Phone #:		NA Sequence (#)		STN	✓
Searcher Location:		AA Sequence (#)		Dialog	
Date Searcher Picked Up:		Structure (#)		Questel/Orbit	
Date Completed:	9/27/02	Bibliographic	✓	Dr.Link	
Searcher Prep & Review Time:	20	Litigation		Lexis/Nexis	
Clerical Prep Time:		Fulltext		Sequence Systems	
Online Time:	73	Patent Family		WWW/Internet	
		Other		Other (specify)	

PTO-1590 (1-2000)

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STRUCTURE FILE UPDATES: 22 SEP 2002 HIGHEST RN 453594-96-2
DICTIONARY FILE UPDATES: 22 SEP 2002 HIGHEST RN 453594-96-2

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP PROPERTIES for more information. See STNote 27, Searching Properties in the CAS Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

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FILE COVERS 1907 - 23 Sep 2002 VOL 137 ISS 13
FILE LAST UPDATED: 22 Sep 2002 (20020922/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> D QUE
L6 4035692 SEA FILE=HCAPLUS ABB=ON (MN OR MANGAN? OR NI OR NICKEL OR FE OR FERRIC OR FERROUS OR CR OR CHROM? OR CO OR COBALT OR CU OR COPPER OR CUPRIC OR CUPROUS OR MO OR MOLYBD?(L)SLURR?)
L8 32686 SEA FILE=HCAPLUS ABB=ON (NA OR SODIUM OR K OR POTASSIUM OR CA OR CALCIUM OR MG OR MAGNESIUM OR B OR BORON OR AL OR ALUMINUM OR ALUMINIUM OR GA OR GALLIUM OR SI OR SILICON OR SN OR TIN OR STANN?)(L)SLURR?

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L9        37051 SEA FILE=HCAPLUS ABB=ON  (L6 OR L8) AND BATTER?
L10         124 SEA FILE=HCAPLUS ABB=ON  L9 AND (NEG OR NEGATIVE?)(1A)(ACT OR
                ACTIV?)
L11          52 SEA FILE=HCAPLUS ABB=ON  L10 AND (LI OR LITHIUM)(1A)BATTER?
L12          44 SEA FILE=HCAPLUS ABB=ON  L11 AND (ANODE? OR ELECTRODE?)
L17        3130 SEA FILE=HCAPLUS ABB=ON  (TRANSITION METAL# OR ALKALI METAL#
                OR ALKALINE EARTH METAL#)(L)SLURR?
L18          18 SEA FILE=HCAPLUS ABB=ON  L17 AND (LI OR LITHIUM)(1A)BATTER?
L23           2 SEA FILE=HCAPLUS ABB=ON  L18 AND (NEG OR NEGATIVE? OR ANODE#)(1
                A)(ACT OR ACTIV?)
L24        3174 SEA FILE=HCAPLUS ABB=ON  (TRANSITION METAL# OR (ALKALI OR
                ALK)(W)METAL# OR (ALKALINE OR ALK)(W)EARTH(W)METAL# OR
                SEMI(W)METAL#)(L)SLURR?
L25          18 SEA FILE=HCAPLUS ABB=ON  L24 AND (LI OR LITHIUM)(1A)BATTER?
L26           2 SEA FILE=HCAPLUS ABB=ON  L25 AND (NEG OR NEGATIVE? OR ANODE#)(1
                A)(ACT OR ACTIV?)
L27        1344 SEA FILE=HCAPLUS ABB=ON  L9 AND (NEG OR NEGATIVE? OR ANODE#)(1A
                )(ACT OR ACTIV?)
L28         611 SEA FILE=HCAPLUS ABB=ON  L27 AND (LI OR LITHIUM)(1A)BATTER?
L29         603 SEA FILE=HCAPLUS ABB=ON  L28 AND (ANODE? OR ELECTROD?)
L30         225 SEA FILE=HCAPLUS ABB=ON  L29 AND BATTERY ANODE?/IT
L31           3 SEA FILE=HCAPLUS ABB=ON  L29 AND BATTERY ANODE?/IT(L)SLURR?
L32           3 SEA FILE=HCAPLUS ABB=ON  L29 AND BATTERY ANODE?(5A)SLURR?
L33           7 SEA FILE=HCAPLUS ABB=ON  L29 AND  ANODE?(5A)SLURR?
L34           5 SEA FILE=HCAPLUS ABB=ON  L29 AND  ELECTROD?(5A)SLURR?
L35          21 SEA FILE=HCAPLUS ABB=ON  L30 AND SOLVENT#
L36          73 SEA FILE=HCAPLUS ABB=ON  L12 OR L26 OR L23 OR (L31 OR L32 OR
                L33 OR L34 OR L35)
L37          57 SEA FILE=HCAPLUS ABB=ON  L36 AND (ANODE# OR ELECTRODE#)/TI,IT
L39          57 SEA FILE=HCAPLUS ABB=ON  L37 OR L23 OR L26
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=> D L39 ALL 1-57

L39 ANSWER 1 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:673162 HCAPLUS
TI Nonaqueous electrolyte **battery** and its manufacture
IN Inoue, Yoshito
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M010-40; H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002252038	A2	20020906	JP 2001-47301	20010222

AB The **battery** is a secondary **Li battery**, where the av. amt. of N-Me-2-pyrrolidone remaining on the **electrodes** is .ltoreq.70 .mu.L/m2. The **battery** is prepd. by: applying a Li contg. **transition metal** oxide **slurry** contg. N-Me-2-pyrrolidone on a cathode collector, applying an **anode active** mass **slurry** contg. N-Me-2-pyrrolidone on an **anode** collector, and drying the **electrodes** to remove N-Me-2-pyrrolidone to a residual amt. .ltoreq.70mL/m2 in the **electrodes**.
ST secondary **lithium battery electrode** methyl

pyrrolidone removal
IT **Battery electrodes**
(**electrodes** with low N-Me-2-pyrrolidone content and their manuf. for secondary **lithium batteries**)
IT 7782-42-5, Graphite 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**electrodes** with low N-Me-2-pyrrolidone content and their manuf. for secondary **lithium batteries**)
IT 872-50-4, N-Methyl-2-pyrrolidone
RL: REM (Removal or disposal); PROC (Process)
(removal of N-Me-2-pyrrolidone from **electrodes** by drying at elevated temps. for secondary **lithium batteries**)

L39 ANSWER 2 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:611843 HCAPLUS
DN 137:143097
TI Secondary **lithium** ion **battery** with **anode** or cathode containing carbon black and graphite carbon and its manufacture
IN Kubota, Kazunori; Kawamura, Motoshi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS H01M004-02; H01M004-04; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002231250	A2	20020816	JP 2001-26083	20010201

PI JP 2002231250 A2 20020816 JP 2001-26083 20010201
AB The title **battery** is equipped with a Li-contg. cathode active mass layer and/or an **anode active** mass layer, in which .gtoreq.1 layer contains .gtoreq.1 kind of carbon black and .gtoreq.1 kind of graphite carbon. The claimed process comprises following steps; dispersing .gtoreq.1 kind of carbon black in a predetd. **solvent**; adding cathode or **anode active** mass and graphite carbon powder for dispersing in the **solvent**; sheet forming from the **solvent**; and then drying. Also claimed process comprises following steps; dispersing .gtoreq.1 kind of a conductive agent and cathode or **anode active** mass in a predetd. **solvent** by stirring under 10 to 1 .times. 105 Pa vacuum; sheet forming; and then drying. The **batteries** have high cond. to show long cycle and good rate characteristics.
ST carbon black graphite dispersing cathode **lithium battery** ; **anode** carbon black graphite dispersing **lithium battery**
IT Carbon black, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conducting agent; manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)
IT Secondary **batteries**
(**lithium**; manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)
IT **Battery anodes**

Battery cathodes
(manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)

IT 52627-24-4, **Cobalt** lithium oxide
RL: DEV (Device component use); USES (Uses)
(cathode; manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conducting agent and **anode**; manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)

IT 872-50-4, N-Methyl-2-pyrrolidone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent**; manuf. of **anode** or cathode by dispersing carbon black and graphite carbon for **lithium battery**)

L39 ANSWER 3 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:573499 HCAPLUS
DN 137:127557
TI Boron-containing carbonaceous powder **anode active** material and secondary **lithium battery** using it
IN Hamada, Takeshi; Kono, Taro; Sugiura, Tsutomu; Shoji, Hiromasa
PA Nippon Steel Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002216754	A2	20020802	JP 2001-8911	20010117

PI JP 2002216754 A2 20020802 JP 2001-8911 20010117

AB Carbonaceous powders for **anode active** materials of secondary **Li batteries** satisfy (1) I(101)/I(100) .gtoreq.2.0 and I(002;P)/I(100;P) .ltoreq.1000 [I(100), I(101) = peak intensity of wide-angle x-ray diffractometry corresponding to (100) and (101) planes, resp.; I(002;P), I(100;P) = peak intensity of wide-angle x-ray diffractometry corresponding to (002) and (100) planes, resp. after applying on a **Cu** foil with binders and **solvents**, drying, and pressing at 100 MPa], (2) [B] - 0.75[N] .gtoreq.1.5, [B] .ltoreq.10, and [N] .ltoreq.1 [[B] = B content; [N] = N content], and (3) .DELTA.Q(.fwdarw.0.9 V) .gtoreq.20 [.DELTA.Q(.fwdarw.0.9 V) = initial Li storage at .gtoreq.0.9 V based on Li/Li+ **electrode** (C/g)]. The **anode active** material shows high discharge capacity and initial charge-discharge efficiency to give secondary **Li batteries** with high energy d.

ST carbonaceous powder boron **anode active** material; **lithium battery anode** carbonaceous boron powder

IT **Battery anodes**
(boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

IT Carbonaceous materials (technological products)
RL: IMF (Industrial manufacture); TEM (Technical or engineered material

use); PREP (Preparation); USES (Uses)
(boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

IT Secondary **batteries**
(**lithium**; boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

IT Coke
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(pitch; boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

IT 108-32-7, Propylene carbonate
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** electrolyte contg.; boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

IT 7440-42-8, Boron, uses 10043-11-5, Boron nitride, uses
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(boron-contg. carbonaceous powder **anode active** material for secondary **lithium battery**)

L39 ANSWER 4 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:426710 HCAPLUS
DN 136:404316
TI Nonaqueous electrolytic solution secondary **battery**
IN Nakai, Kenji; Koishikawa, Yoshimasa; Yagi, Youshin; Hironaka, Kensuke
PA Shin-Kobe Electric Machinery Co. Ltd., Japan
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M004-50
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1211747	A2	20020605	EP 2001-308884	20011019
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2002170597	A2	20020614	JP 2000-368725	20001204
	JP 2002231244	A2	20020816	JP 2001-30357	20010207
	US 2002102460	A1	20020801	US 2001-977214	20011016
PRAI	JP 2000-368725	A	20001204		
	JP 2001-30357	A	20010207		

AB The present invention is to provide a non-aq. electrolytic soln. secondary **battery** which has high safety while maintaining high capacity and high power. A cylindrical **lithium**-ion **battery** is provided in a **battery** lid which is a portion of a **battery** container with a cleavage valve which cleaves at a predetd. pressure, and includes an **electrode** winding group prepd. by winding a pos. **electrode**, a neg. **electrode** and a separator, connection portions for connecting the **electrode** winding group to resp. **electrode** terminals, and non-aq. electrolytic soln. therein. As a pos. **electrode** active material, lithium **manganate** where the amt. of elution of **manganese** into the non-aq. electrolytic soln. is 5% or less based on the lithium **manganate** in a region where an **electrode**

potential to metal lithium is 4.8 V or more is used. As a **neg. electrode active** material, graphite in/from which lithium ions can be occluded/released according to charging and discharging is used.

ST **battery** secondary nonaq electrolyte soln; safety **battery** secondary nonaq electrolyte soln

IT Secondary **batteries**
(**lithium**; nonaq. electrolytic soln. secondary **battery**)

IT **Battery anodes**
(nonaq. electrolytic soln. secondary **battery**)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytic soln. secondary **battery**)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(amorphous; nonaq. electrolytic soln. secondary **battery**)

IT 60-29-7, Diethyl ether, uses 75-05-8, Acetonitrile, uses 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 107-12-0, Propionitrile 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 2550-62-1, Methanesulfonic acid, lithium salt 4358-26-3, Tetraphenylborate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12057-17-9, Lithium **manganese** oxide limn2o4 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 35678-71-8, MethylSulfolane 110320-40-6, Polypropylene carbonate 172922-65-5, Lithium **manganese** oxide Li1.06Mn1.94O4 178404-38-1, Lithium **manganese** oxide Li1.14Mn1.86O4 431063-54-6, Aluminum lithium **manganese** oxide (Al0.1Li1.09Mn1.81O4)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytic soln. secondary **battery**)

L39 ANSWER 5 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:361540 HCAPLUS
TI Metal oxides as negative **electrode** materials in Li-ion cells
AU Badway, F.; Plitz, I.; Grugeon, S.; Laruelle, S.; Dolle, M.; Gozdz, A. S.; Tarascon, J.-M.
CS Telcordia Technologies, Red Bank, NJ, 07701, USA
SO Electrochemical and Solid-State Letters (2002), 5(6), A115-A118
CODEN: ESLEF6; ISSN: 1099-0062
PB Electrochemical Society
DT Journal
LA English
CC 52 (Electrochemical, Radiational, and Thermal Energy Technology)
AB The electrochem. performance of 3d metal oxide (**MO**) **electrode** materials for **Li**-ion **batteries** was studied in the form of Li/CoO(Co3O4) half-cells. Reversible capacity in the 750-1000 mAh/g range was achieved and sustained over numerous charge-discharge cycles both at room temp. and at 55.degree.C. The studied oxides were then used as **neg.-electrode active** materials to assemble larger plastic **MO**/LiCoO2 Li-ion cells, which exhibited an av. output voltage of 2 V and a stable reversible specific energy of 120 Wh/kg during extended cycling at ambient and elevated temps. This value can be compared to 180 Wh/kg obtained for similar C/LiCoO2 Li-ion cells. Based on modeling, several scenarios involving material considerations present the optimum method for boosting the energy d. of such **MO**/LiCoO2 Li-ion systems.
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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(4) Gozdz, T; The Electrochemical Society and The Electrochemical Society of Japan Meeting Abstracts 1999, V99-2
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(17) Shodai, T; Solid State Ionics 1996, V86-88, P785 HCAPLUS
(18) Tarascon, J; US 5266299 1993 HCAPLUS
(19) Tarascon, J; J Electrochem Soc 1991, V138, P2865
(20) Tarascon, J; Solid State Ionics 1996, V86, P49

L39 ANSWER 6 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:273046 HCAPLUS
DN 136:312524
TI **Lithium** secondary **battery** with **lithium** **manganese** oxide positive **electrode** active mix with layered structure
IN Sasaki, Iwao; Ukyo, Yoshio
PA Toyota Central Research and Development Laboratories, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-36
ICS C01G045-00; H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002110226	A2	20020412	JP 2001-221082	20010723
PRAI	JP 2000-226929	A	20000727		

AB A **Li** secondary **battery** comprises a (Li,**Mn**)O mainly contg. LiMnO2 and having a layered structure as a pos. **electrode** active mass, a substance capable of absorbing and desorbing Li as a **neg. electrode active** mass, and an aq. soln. contg. a Li salt as an electrolytic soln. The (Li, **Mn**)O having a layered structure preferably has a hexagonal layered rock salt structure. The **neg. electrode** **active** mix is a transition metal chalcogenide: TiS2, MoS2, NbS2, or VS2.

ST **lithium** secondary **battery** hexagonal layered structure
IT Crystal structure types
(hexagonal; **lithium** secondary **battery** with **lithium manganese** oxide pos. **electrode** active mix with hexagonal layered structure)
IT Secondary **batteries**
(**lithium** secondary **battery** with **lithium**

manganese oxide pos. **electrode** active mix with hexagonal layered structure)

IT Transition metal chalcogenides
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mix.; **lithium** secondary **battery** with **lithium** **manganese** oxide pos. **electrode** active mix with hexagonal layered structure of)

IT 14762-51-7, Halite
RL: MSC (Miscellaneous)
(**lithium** secondary **battery** with **lithium** **manganese** oxide pos. **electrode** active mix with hexagonal layered structure of)

IT 1317-33-5, Molybdenum disulfide, uses 12039-08-6, Titanium sulfide 12136-97-9, Niobium disulfide 12166-28-8, Vanadium disulfide
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mass; **lithium** secondary **battery** with **lithium** **manganese** oxide pos. **electrode** active mix with hexagonal layered structure)

IT 12162-79-7, Lithium **manganese** oxide limno2
RL: DEV (Device component use); USES (Uses)
(pos. **electrode** active; **lithium** secondary **battery** with **lithium** **manganese** oxide pos. **electrode** active mix with hexagonal layered structure)

L39 ANSWER 7 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:763479 HCAPLUS
DN 135:306285
TI **Anode** for **lithium** secondary **battery**
IN Hashimoto, Takuya; Fukui, Atsushi; Yano, Mutsumi; Itoh, Yasuhiko
PA Japan
SO U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01M004-38
ICS H01M004-40
NCL 429218100
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001031398	A1	20011018	US 2001-800738	20010308
	JP 2001332255	A2	20011130	JP 2000-184005	20000620
PRAI	JP 2000-74582	A	20000316		
	JP 2000-184005	A	20000620		

AB The neg. **electrode** of this invention includes, as a **neg** . **electrode active** material, substantially amorphous aluminum alloy in the form of a powder with an av. particle size of 50 .mu.m or less represented by a compn. formula, Al100-xMx, in which M is at least one element selected from the group consisting of La, Y, Yb, Ce, Gd, Nd, Sm, Pr, Er, **Ni**, **Co**, **Cu** and **Fe**; and 1.ltoreq.x.ltoreq.20. Owing to this neg. **electrode**, a **lithium** secondary **battery** having large discharge capacity and exhibiting very good charge-discharge cycle performance can be realized.

ST **lithium** secondary **battery anode**; aluminum alloy **lithium** secondary **battery anode**

IT **Battery anodes**
Particle size
(**anode** for **lithium** secondary **battery**)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**anode** for **lithium** secondary **battery**)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode** for **lithium** secondary **battery**)
IT Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(lithiated; **anode** for **lithium** secondary **battery**)
IT Secondary **batteries**
(**lithium**; **anode** for **lithium** secondary **battery**)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 9003-07-0, Polypropylene 12190-79-3, **Cobalt** lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 39300-70-4, Lithium **nickel** oxide 39457-42-6, Lithium **manganese** oxide 52627-24-4, **Cobalt** lithium oxide
RL: DEV (Device component use); USES (Uses)
(**anode** for **lithium** secondary **battery**)
IT 12677-96-2P, Aluminum 95, **copper** 5 atomic 12684-97-8P, Aluminum 99, cerium 1 atomic 39477-14-0P 51602-60-9P, Aluminum 95, **nickel** 5 atomic 84913-12-2P, Aluminum 80, cerium 20 atomic 99712-59-1P, Aluminum 95, yttrium 5 atomic 106902-08-3P 114172-44-0P, Aluminum 95, iron 5 atomic 122067-30-5P 122067-54-3P 141960-38-5P, Aluminum 90, cerium 10 atomic 188243-26-7P, Aluminum 97, cerium 3 atomic 188243-30-3P 367269-95-2P 367269-96-3P 367269-97-4P 367269-98-5P 367269-99-6P 367270-00-6P 367270-01-7P 367270-02-8P 367270-03-9P 367270-04-0P 367270-05-1P 367270-06-2P 367270-07-3P 367270-08-4P 367270-09-5P 367270-10-8P 367270-11-9P 367270-12-0P 367270-13-1P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**anode** for **lithium** secondary **battery**)
IT 9002-84-0, Ptfe
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode** for **lithium** secondary **battery**)

L39 ANSWER 8 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:745675 HCAPLUS
DN 135:275394
TI Binder compositions, **electrode** active mass **slurries**, **electrodes**, and secondary **lithium batteries**
IN Yamakawa, Masahiro; Maeda, Koichiro; Yamamoto, Akihisa
PA Nippon Zeon Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001283857	A2	20011012	JP 2000-96857	20000331

PI JP 2001283857 A2 20011012
AB The binders contain an org. liq., a polysaccharide, contg. D-glucose units connected by 1,,4- or 1,6-connections, sol. in the liq., and other

polymers sol. in the liq. Secondary **Li batteries** have cathodes and/or **anodes** using **active** mass pastes contg. the binder.

ST secondary **lithium battery electrode** binder compn; **lithium battery electrode** binder polysaccharide polymer mixt

IT **Battery electrodes**
Binders
(binders contg. org. solvent sol. polysaccharides and polymers for cathodes in secondary **lithium batteries**)

IT Fluoropolymers, uses
Nitrile rubber, uses
RL: DEV (Device component use); USES (Uses)
(binders contg. org. solvent sol. polysaccharides and polymers for **electrodes** in secondary **lithium batteries**)

IT 872-50-4, NMP, uses 7440-44-0, Carbon, uses 52627-24-4, **Cobalt** lithium oxide
RL: DEV (Device component use); USES (Uses)
(binders contg. org. solvent sol. polysaccharides and polymers for cathodes in secondary **lithium batteries**)

IT 9049-76-7, Starch, hydroxypropyl ether 9057-02-7, Pullulan 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); USES (Uses)
(binders contg. org. solvent sol. polysaccharides and polymers for **electrodes** in secondary **lithium batteries**)

IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, binders contg. org. solvent sol. polysaccharides and polymers for **electrodes** in secondary **lithium batteries**)

IT 106107-54-4, Butadiene-styrene block copolymer
RL: DEV (Device component use); USES (Uses)
(radial; binders contg. org. solvent sol. polysaccharides and polymers for cathodes in secondary **lithium batteries**)

L39 ANSWER 9 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:676382 HCAPLUS
DN 135:213509
TI Solid electrolyte **battery**
IN Hara, Tomitaro; Shibuya, Mashio; Suzuki, Yusuke
PA Sony Corp., Japan
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1132987	A2	20010912	EP 2001-105134	20010302
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001256999	A2	20010921	JP 2000-72512	20000310
	NO 2001001210	A	20010911	NO 2001-1210	20010309
	CN 1319906	A	20011031	CN 2001-111305	20010309
	US 2002015885	A1	20020207	US 2001-803561	20010309
PRAI	JP 2000-72512	A	20000310		

AB In a solid electrolyte cell, oxidative decompn. of electrolyte components

is suppressed to maintain the superior cell performance. The solid electrolyte includes a neg. **electrode** having a neg. **electrode** current collector and a **neg. electrode** **active** material, a pos. **electrode** having a pos. **electrode** current collector and a pos. **electrode** active material and a solid electrolyte arranged between the neg. **electrode** and the pos. **electrode** and which is comprised of an electrolyte salt dispersed in a matrix polymer. A diene compd. is contained in at least one of the pos. **electrode** and the solid electrolyte.

ST **battery** solid electrolyte

IT Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(alkanesulfonic; solid electrolyte **battery** contg. diene compd.)

IT Secondary **batteries**
(**lithium**; solid electrolyte **battery** contg. diene compd.)

IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-; solid electrolyte **battery** contg. diene compd.)

IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polysulfone-; solid electrolyte **battery** contg. diene compd.)

IT **Battery anodes**
Battery cathodes
Battery electrolytes
(solid electrolyte **battery** contg. diene compd.)

IT Fluoropolymers, uses
Polycarbonates, uses
Polyoxyalkylenes, uses
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(solid electrolyte **battery** contg. diene compd.)

IT Cycloalkadienes
RL: MOA (Modifier or additive use); USES (Uses)
(solid electrolyte **battery** contg. diene compd.)

IT 60-29-7, Diethyl ether, uses 67-68-5, Dmso, uses 75-05-8, Acetonitrile, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 452-10-8, 2,4-Difluoroanisole 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane 872-36-6, Vinylene carbonate 7550-35-8, Lithium bromide 7782-42-5, Graphite, uses 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9003-05-8, Polyacryl amide 12190-79-3, **cobalt** lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride 25087-26-7, Polymethacrylic acid 25322-68-3, Peo 25322-69-4, Polypropylene oxide 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 131651-65-5, Lithium perfluorobutanesulfonate 132404-42-3
RL: DEV (Device component use); USES (Uses)
(solid electrolyte **battery** contg. diene compd.)

IT 628-41-1, 1,4-Cyclohexadiene
RL: MOA (Modifier or additive use); USES (Uses)
(solid electrolyte **battery** contg. diene compd.)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(solid electrolyte **battery** contg. diene compd.)

L39 ANSWER 10 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:673669 HCAPLUS
DN 135:213490
TI **Anode active** mass **slurries** for secondary nonaqueous electrolyte **batteries** and the **batteries**
IN Egawa, Takashi; Okamoto, Tomohito
PA Japan Storage Battery Co., Ltd., Japan; GS-Melcotec Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS H01M004-02; H01M004-04; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001250558	A2	20010914	JP 2000-63483	20000308

AB The **anode active** mass **slurries** contain a Li intercalating carbonaceous material, a binder dispersed in water, a water sol. thickener, and a fluoro surfactant. The **batteries** use **anodes** prepd. from the **slurries**.
ST secondary **lithium battery anode** **active** mass **slurry**; carbonaceous active mass **slurry lithium battery anode**
IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(carboxylic acids; fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT **Battery anodes**
(fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT Surfactants
(fluorosurfactants; fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT Styrene-butadiene rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
(latex, aq. dispersion; aq. binder dispersion in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(perfluoro; fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(perfluoroalkyl tri-Me; fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(compns. of lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)
IT 1763-23-1D, Perfluorooctanesulfonic acid, salt 5329-14-6D, Aminosulfonic

acid, perfluoroalkyl, salt 7664-38-2D, Phosphoric acid, perfluoroalkyl esters, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro surfactants in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)

IT 9003-55-8
RL: NUU (Other use, unclassified); USES (Uses)
(styrene-butadiene rubber, latex, aq. dispersion; aq. binder dispersion in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)

IT 9000-11-7D, CMC, ammonium salt 9004-32-4, CMC, **sodium** salt
RL: NUU (Other use, unclassified); USES (Uses)
(water sol. thickeners in lithium intercalating carbonaceous **anode active** mass **slurries** for secondary **lithium batteries**)

L39 ANSWER 11 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:635714 HCAPLUS
DN 135:183329
TI Manufacture of secondary nonaqueous electrolyte **batteries**
IN Kano, Koji; Iwahisa, Masahiro; Hibino, Seiji
PA Toshiba Battery Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001236991	A2	20010831	JP 2000-43081	20000221

AB The **batteries** are manufd. by using cathode and/or **anode active slurries** prepd. by stirring a mixt. contg. an **electrode** active mass, a nonaq. electrolyte retaining binder, a plasticizer, and a solvent at a temp. .gtoreq.40.degree. and below the bubble generating temp. of the mixt. The **battery** separators may also be manufd. by using a slurry contg. an electrolyte retaining binder, a plasticizer, and a solvent prepd. in a similar manner.
ST secondary nonaq **battery electrode** separator manuf temp control
IT Secondary **batteries**
(**lithium**; temp. control in prepn. of **electrode** active mass **slurries** and separator **slurries** for secondary **lithium batteries**)
IT **Battery electrodes**
(temp. control in prepn. of **electrode** active mass **slurries** for secondary **lithium batteries**)
IT Carbon fibers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(temp. control in prepn. of **electrode** active mass **slurries** for secondary **lithium batteries**)
IT Secondary **battery** separators
(temp. control in prepn. of separator slurries for secondary **lithium batteries**)
IT 84-74-2, Dbp 9011-17-0, Hexafluoropropylene-vinylidene fluoride

copolymer
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(temp. control in prepn. of **electrode** active mass **slurries** and separator **slurries** for secondary **lithium batteries**)

IT 67-64-1, Acetone, uses 872-50-4, N-Methylpyrrolidone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(temp. control in prepn. of **electrode** active mass **slurries** and separator **slurries** for secondary **lithium batteries**)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(temp. control in prepn. of **electrode** active mass **slurries** for secondary **lithium batteries**)

IT 7631-86-9, Silica, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(temp. control in prepn. of separator slurries for secondary **lithium batteries**)

L39 ANSWER 12 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:469464 HCAPLUS
DN 135:63781
TI **Slurries** for secondary **lithium battery** **anode active** materials and manufacture of **anodes**
IN Shin, Ge Yoon; Yoon, Sang Young; Kim, Sang Jin
PA Samsung SDI Co., Ltd., S. Korea
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-02
ICS H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001176500	A2	20010629	JP 2000-346064	20001114
PRAI KR 1999-55895	A	19991208		

AB The **slurries** contain (a) **anode active** materials, (**b**) compds. of elements selected from **transition metals**, **alkali metals**, **alk. earth metals**, and **semi metals**, and (c) org. **solvents**. Secondary **anode active** materials (a) are mixed with the addnl. (**semi**) **metal** compds. (**b**) and then with org. **solvents** (c) to give a **slurry**, which is applied on a collector, dried, and rolled to give the **battery anodes**. **Batteries** with the **anode active** materials have long service life.

ST secondary **lithium battery anode** **slurry**; **nickel** hydroxide graphite **battery** **anode**

IT **Battery anodes**
(**slurries** for prepn. of secondary **lithium battery anodes** with long service life)

IT **Alkali metal** compounds
Alkaline earth compounds

Semimetals
Transition metal compounds
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**slurries** for prepn. of secondary **lithium** **battery anodes** with long service life)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**slurries** for prepn. of secondary **lithium** **battery anodes** with long service life)

IT 78-10-4, Tetraethyl orthosilicate 1303-86-2, Boria, uses 5794-28-5, **Calcium** oxalate monohydrate 7637-07-2, **Boron** trifluoride, uses 10043-35-3, Boric acid, uses 11113-74-9, **Nickel** hydroxide
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**slurries** for prepn. of secondary **lithium** **battery anodes** with long service life)

L39 ANSWER 13 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:414778 HCAPLUS
DN 135:21931
TI Binder, composition and **slurry** using it for **electrode**, **electrode**, and secondary **lithium**-ion **battery** using it
IN Kanzaki, Atsuhiro
PA Nippon Zeon Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001155737	A2	20010608	JP 1999-338870	19991130

AB The binder comprises polymer particles contg. an elec. conducting polymer and a non-conducting polymer. The title compn. is a dispersion of the binder. The title slurry contains the compn. and C material or metal oxide as active mass. Also claimed are **battery** **electrode** obtained by using the **slurry** and secondary **Li**-ion **battery** using the **electrode**. The **battery** has high discharge capacity even under high-temp. atm. and shows good cycling performance and high-rate performance.

ST elec conducting polymer binder **electrode** **lithium** ion **battery**

IT **Battery anodes**
Battery cathodes
Binders
Conducting polymers
(binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)
(**anode active** mass; binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

IT 9002-84-0, PTFE 9003-55-8, Butadiene-styrene copolymer 30604-81-0, Polypyrrole
RL: DEV (Device component use); USES (Uses)
(binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode active mass; binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

IT 872-50-4, N-Methylpyrrolidone, uses
RL: DEV (Device component use); USES (Uses)
(dispersion medium for binder; binder contg. elec. conducting polymer and non-conducting polymer for **electrode** for **Li**-ion **battery**)

L39 ANSWER 14 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:380964 HCAPLUS
DN 134:369457
TI Lithium secondary cell
IN Yoshida, Toshikazu; Ohshita, Ryuji; Kamino, Maruo; Fujitani, Shin
PA Sanyo Electric Co., Ltd., Japan
SO PCT Int. Appl., 25 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001037364	A1	20010525	WO 2000-JP7650	20001030
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	JP 2001143764	A2	20010525	JP 1999-328048	19991118
PRAI	JP 1999-328048	A	19991118		

AB A lithium secondary cell comprises a pos. **electrode**, a neg. **electrode** contg. graphite as a **neg. electrode active** material, and a non-aq. electrolytic soln., and the 7Li-NMR measurement of the **neg. electrode active** material in the state of being fully charged, the ratio (I2/I1) of the peak intensity (I2) at .apprx.266 ppm (corresponding to the Li deposited on the surface of the graphite) to the peak intensity (I1) at .apprx.43 ppm (corresponding to the Li inserted between layers of graphite) is in the range of 0<I2/I1<0.5. It is preferred that the solute of the non-aq. electrolytic soln. contains LiPF6 and LiN(C2F5SO2)2, and that the solvent of the soln. contains a 5- or 6-membered heterocyclic compd. having at least one of O, S and N. The lithium secondary cell exhibits enhanced charge and discharge capacities and improved charge storing

characteristics.
ST **lithium battery** charged neg **electrode** NMR measurement
IT **Battery electrodes**
Secondary **batteries**
(**lithium** secondary cell comprising non-aq. electrolytic soln.)
IT 21324-40-3, Lithium hexafluorophosphate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte; lithium secondary cell comprising non-aq. electrolytic soln.)
IT 14283-07-9, Lithium tetrafluoroborate 15138-76-8, Lithium tetrafluoroaluminate 15273-76-4, Lithium tetrafluorobismuthate(1-) 18424-17-4, Lithium hexafluoroantimonate 29935-35-1, Lithium hexafluoroarsenate 31235-21-9, Lithium tetrafluoroindate 33454-82-9 39210-67-8, Gallium lithium fluoride (LiGaF4) 119229-99-1 132404-42-3 132843-44-8 189217-59-2 227098-71-7
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(electrolyte; lithium secondary cell comprising non-aq. electrolytic soln.)
IT 228717-86-0
RL: MOA (Modifier or additive use); USES (Uses)
(lithium secondary cell comprising non-aq. electrolytic soln.)
IT 109-02-4, n-Methylmorpholine 126-33-0, Sulfolane 288-14-2, Isoxazole 872-36-6, Vinylene carbonate 872-50-4, n-Methyl-2-pyrrolidone, uses 1120-71-4, 1,3-Propanesultone 28452-93-9, Butadiene sulfone 176719-70-3 210406-60-3 210406-61-4 210406-62-5 252877-06-8
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(lithium secondary cell comprising non-aq. electrolytic soln.)
IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(neg. **electrode**; lithium secondary cell comprising non-aq. electrolytic soln.)
IT 12190-79-3, Lithium **cobalt** oxide LiCoO2
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(pos. **electrode**; lithium secondary cell comprising non-aq. electrolytic soln.)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Kabusiki Kaisya Toshiba; JP 06275321 A HCAPLUS
(2) Kabusiki Kaisya Toshiba; EP 573266 A1 1993 HCAPLUS
(3) Sanyo Electric Co Ltd; JP 10189045 A HCAPLUS
(4) Sanyo Electric Co Ltd; JP 09312171 A 1997 HCAPLUS
(5) Sanyo Electric Co Ltd; EP 886334 A1 1998 HCAPLUS
(6) Sanyo Electric Co Ltd; JP 11111332 A 1999 HCAPLUS
(7) Sanyo Electric Co Ltd; JP 11283667 A 1999 HCAPLUS

L39 ANSWER 15 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:356342 HCAPLUS
DN 134:329109
TI Nonaqueous secondary **battery**
IN Imachi, Naoki; Watanabe, Hiroshi; Narukawa, Satoshi
PA Sanyo Electric Co., Ltd., Japan
SO Eur. Pat. Appl., 34 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-50
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1100133	A2	20010516	EP 2000-124160	20001107
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001143705	A2	20010525	JP 1999-322150	19991112
	CN 1296305	A	20010523	CN 2000-132242	20001113
PRAI	JP 1999-322150	A	19991112		

AB A nonaq. secondary **battery** comprising an **anode** made of an **active anode** material capable of intercalating/deintercalating lithium ion, a cathode made of spinnel type Li-**Mn** oxide as a main cathode active material, and an electrolyte contg. a nonaq. **solvent** is characterized in that the cathode comprises Li-**Co** oxide in admixt. with spinnel type Li-**Mn** oxide having crystal lattices partly substituted by Mg or Al and the nonaq. **solvent** comprises vinylene carbonate incorporated therein.

ST **battery** nonaq secondary; **lithium battery** nonaq secondary

IT **Battery anodes**
Battery cathodes
Secondary **batteries**
(nonaq. secondary **battery**)

IT Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(nonaq. secondary **battery**)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; nonaq. secondary **battery**)

IT 872-36-6, Vinylene carbonate 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 52627-24-4, **Cobalt** lithium oxide 178404-39-2, Lithium **manganese** oxide Li1.09Mn1.91O4 336883-54-6, Lithium magnesium **manganese** oxide (Li1.07Mg0.04Mn1.89O4) 336883-55-7, Aluminum lithium **manganese** oxide (Al0.04Li1.07Mn1.89O4)
RL: DEV (Device component use); USES (Uses)
(nonaq. secondary **battery**)

IT 39457-42-6, Lithium **manganese** oxide
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. secondary **battery**)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nonaq. secondary **battery**)

L39 ANSWER 16 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:246683 HCAPLUS
DN 134:254689
TI Nonaqueous electrolyte secondary **battery**
IN Yamaguchi, Akira; Hatake, Shinji; Omaru, Atsuo; Nagamine, Masayuki
PA Sony Corporation, Japan
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-62
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1089366	A1	20010404	EP 2000-121433	20000929
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001102049	A2	20010413	JP 1999-278249	19990930
	TW 466791	B	20011201	TW 2000-89119772	20000925
	CN 1301052	A	20010627	CN 2000-129286	20000930
PRAI	JP 1999-278249	A	19990930		

AB A nonaq. electrolyte secondary **battery** is disclosed with a pos. **electrode** including a pos.-**electrode** active material, a neg. **electrode** including a **neg.-electrode** **active** material, and a nonaq. electrolyte soln. The neg. **electrode** further includes carbon fibers and carbon flakes. The synergistic effects of the improved retention of the electrolyte soln. by the carbon fibers and the improved cond. between the active material particles by the carbon flakes facilitate doping/undoping of lithium in a high-load current mode and increase the capacity of the **battery** in the high-load current mode.

ST **battery** nonaq electrolyte secondary

IT Coal tar pitch
(binder; nonaq. electrolyte secondary **battery**)

IT EPDM rubber
Fluoropolymers, uses
Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; nonaq. electrolyte secondary **battery**)

IT Secondary **batteries**
(**lithium**; nonaq. electrolyte secondary **battery**)

IT **Battery anodes**
Battery cathodes
Battery electrolytes
(nonaq. electrolyte secondary **battery**)

IT Carbon fibers, uses
Carbonaceous materials (technological products)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte secondary **battery**)

IT Coke
RL: RCT (Reactant); RACT (Reactant or reagent)
(nonaq. electrolyte secondary **battery**)

IT 9002-84-0, Ptfe 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; nonaq. electrolyte secondary **battery**)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(flakes; nonaq. electrolyte secondary **battery**)

IT 60-29-7, Diethyl ether, uses 75-05-8, Acetonitrile, uses 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-12-0, Propionitrile 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5, 4-Methyl-1,3-dioxolane 2550-62-1, Lithium methanesulfonate 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 11113-67-0, Iron lithium oxide 11126-15-1, Lithium vanadium oxide 12190-79-3, **Cobalt** lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium

tetraphenylborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35678-71-8, Methylsulfolane 37220-89-6, Aluminum lithium oxide 39300-70-4, Lithium **nickel** oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium **manganese** oxide 52627-24-4, **Cobalt** lithium oxide
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary **battery**)
IT 9003-55-8
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, binder; nonaq. electrolyte secondary **battery**)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ahn, S; WO 9900001 A 1999 HCAPLUS
(2) Anon; PATENT ABSTRACTS OF JAPAN 1989, V013(086), PE-720
(3) Anon; PATENT ABSTRACTS OF JAPAN 1996, V1996(11)
(4) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(05)
(5) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(03)
(6) Anon; PATENT ABSTRACTS OF JAPAN 2000, V2000(05)
(7) Anon; PATENT ABSTRACTS OF JAPAN 2000, V2000(08)
(8) Japan Storage Battery Co Ltd; JP 2000058066 A 2000 HCAPLUS
(9) Matsushita Electric Ind Co Ltd; JP 08180864 A 1996 HCAPLUS
(10) Matsushita Electric Ind Co Ltd; JP 08287952 A 1996 HCAPLUS
(11) Shin Kobe Electric Mach Co Ltd; JP 63264865 A 1988 HCAPLUS
(12) Sony Corp; JP 09027344 A 1997 HCAPLUS
(13) Sony Corp; EP 0871233 A 1998 HCAPLUS
(14) Toyota Central Res & Amp; JP 2000133267 A 2000 HCAPLUS

L39 ANSWER 17 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:50237 HCAPLUS
DN 134:88846
TI **Anode** current collector in **lithium**-ion **battery** cell
IN Wasynczuk, James A.
PA Hughes Electronics Corp., USA
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-64
ICS H01M004-66
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1069635	A1	20010117	EP 2000-111364	20000526
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6228536	B1	20010508	US 1999-353005	19990713
	JP 2001052712	A2	20010223	JP 2000-211293	20000712
PRAI	US 1999-353005	A	19990713		

AB A **lithium**-ion **battery** cell assembly includes a neg. **electrode** having a neg. current collector contacting a **neg**. **electrode active** material. The neg. current collector is prepd. by providing a piece of a neg. current collector metal, thereafter oxidizing the piece of the neg. current collector metal, and thereafter reducing the piece of the neg. current collector metal. The neg. **electrode** is assembled with a pos. **electrode** with an intermediate separator. An electrolyte sats. the

electrodes and the separator, and provides a lithium ion path between the neg. **electrode** and the pos. **electrode.**
ST **lithium battery anode** current collector
IT Adhesion, physical
Battery anodes
Etching
Oxidation
Reduction
(**anode** current collector treatment for **lithium**-ion **battery** cell)
IT Secondary **batteries**
(**lithium**; **anode** current collector treatment for **lithium**-ion **battery** cell)
IT 7440-44-0, Carbon, uses 7440-50-8, **Copper**, uses 12190-79-3, **Cobalt** lithium oxide colio2
RL: DEV (Device component use); USES (Uses)
(**anode** current collector treatment for **lithium**-ion **battery** cell)
IT 1310-73-2, Sodium hydroxide, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(**anode** current collector treatment for **lithium**-ion **battery** cell)
IT 74-94-2, Dimethylamineborane 7758-19-2, Sodium chlorite
RL: RCT (Reactant); RACT (Reactant or reagent)
(**anode** current collector treatment for **lithium**-ion **battery** cell)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; PATENT ABSTRACTS OF JAPAN 1999, V1999(11)
(2) Canon Kk; EP 0732761 A 1996 HCAPLUS
(3) Hitachi; EP 1018773 A 2000 HCAPLUS
(4) Hitachi; PATENT ABSTRACTS OF JAPAN 2000, V2000(2)
(5) Hitachi Ltd; JP 11307102 A 1999 HCAPLUS
(6) Hitachi Ltd; JP 11307102 A 1999 HCAPLUS
(7) Mitsubishi Materials; JP 11167922 A 1999 HCAPLUS
(8) Mitsubishi Materials Corp; JP 11167922 A 1999 HCAPLUS
(9) Shokoohi, F; US 5470357 A 1995 HCAPLUS

L39 ANSWER 18 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:861126 HCAPLUS
DN 134:7008
TI Nonaqueous electrolyte **battery**
IN Yamaura, Kiyoshi
PA Sony Corp., Japan
SO Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-48
ICS H01M004-50
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1058325	A2	20001206	EP 2000-111667	20000531
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000348722	A2	20001215	JP 1999-158355	19990604
PRAI	JP 1999-158355	A	19990604		

AB A nonaq. electrolyte **battery** free from considerable change in the structure of a cathode active material thereof to enlarge the capacity thereof, incorporating a cathode contg. a cathode active material; an **anode** contg. an **anode active** material to which Li can be doped/dedoped; and a nonaq. electrolyte disposed between the cathode and the **anode** and contg. nonaq. **solvent** and an electrolyte, wherein a material expressed by general formula LiMn1-yAlyO2 (0.06 .ltoreq. y < 0.25) is contained as the cathode active material and LiMn1-yAlyO2 has a cryst. structure expressed by spatial group C2/m.

ST nonaq electrolyte **lithium battery**; aluminum lithium **manganese** oxide cathode **battery**

IT **Battery** cathodes
(aluminum lithium **manganese** oxide; nonaq. electrolyte **battery**)

IT Secondary **batteries**
(**lithium**; nonaq. electrolyte **battery**)

IT **Battery anodes**
(nonaq. electrolyte **battery**)

IT Lithium alloy
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery**)

IT 60-29-7, Diethyl ether, uses 75-05-8, Acetonitrile, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 100-66-3, Anisole, uses 105-58-8, Diethyl carbonate 107-12-0, Propionitrile 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 2550-62-1, Lithium methanesulfonate 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 35678-71-8, Methylsulfolane 110320-40-6, Polypropylene carbonate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery**)

L39 ANSWER 19 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:686779 HCAPLUS
DN 133:284075
TI **Lithium** secondary **battery** having high discharge capacity
IN Oshita, Ryuji; Nishida, Nobumichi; Watanabe, Hiroshi; Fujitani, Shin
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000268822	A2	20000929	JP 1999-74769	19990319

AB A composite oxide having an anatase-type crystal structure and a compn. MxTi1-xO2 is used as **electrode** active material of a **Li** secondary **battery** for enhanced discharge capacity, where M = V, **Mn**, **Fe**, **Co**, **Ni**, **Mo**, and/or Ir, and x >0 but .ltoreq.0.11. When the composite oxide is used as pos.

active material, C or Li added C is used as **neg. active** material. When a Li-contg. transition metal oxide (e.g., LiCoO2) is used as pos. active material, the composite oxide is used as **neg. active** material.

ST **lithium battery electrode** active material discharge capacity

IT Secondary **batteries**
(**lithium; electrode** active materials for improving discharge capacity of **lithium** secondary **battery**)

IT 299913-52-3 299913-55-6 299913-58-9 299913-61-4 299913-63-6 299913-65-8 299913-67-0
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrode** active materials for improving discharge capacity of **lithium** secondary **battery**)

L39 ANSWER 20 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:686425 HCAPLUS
DN 133:240636
TI Nonaqueous electrolyte **battery**
IN Tomita, Takashi; Ojima, Hideaki; Ishino, Kinichi; Kondo, Takayuki
PA Sony Corporation, Japan
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-02
ICS H01M004-62; H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1039567	A1	20000927	EP 2000-106324	20000323
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000277157	A2	20001006	JP 1999-82375	19990325
PRAI	JP 1999-82375	A	19990325		

AB A nonaq. electrolyte **battery** having improved low temp. characteristics and preservation characteristics includes a neg. **electrode** contg. a carbon material as a **neg. electrode active** material, a pos. **electrode** contg. a pos. **electrode** active material and which is arranged facing the neg. **electrode** and a nonaq. electrolyte arranged between the neg. and pos. **electrodes**. The neg. **electrode** contains a material not doped with lithium and/or not releasing lithium in an amt. of not less than 20 wt% and not larger than 40 wt% based on the **neg. electrode active** material.

ST **lithium battery** nonaq electrolyte

IT Carboxylic acids, uses
RL: DEV (Device component use); USES (Uses)
(esters; nonaq. electrolyte **battery** with improved low-temp. characteristics)

IT **Battery anodes**
Battery electrolytes
Primary **batteries**
(nonaq. electrolyte **battery** with improved low-temp. characteristics)

IT Carbonaceous materials (technological products)
Ethers, uses
RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT Rare earth oxides
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT Petroleum pitch
(precursor; nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT 463-79-6D, Carbonic acid, esters, uses
RL: DEV (Device component use); USES (Uses)
(cyclic and chain; nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 17347-95-4, Lithium hexafluorosilicate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT 1305-78-8, Calcia, uses 1309-48-4, Magnesia, uses 1314-11-0, Strontia, uses 1314-23-4, Zirconium oxide, uses 1314-36-9, Yttria, uses 1344-28-1, Alumina, uses 1345-13-7, Cerium oxide ce2o3 7631-86-9, Silica, uses 10034-77-2, Calcium silicate ca2sio4 12141-46-7, Aluminum silicate al2sio5
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT 12190-79-3P, **Cobalt** lithium oxide colio2
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
IT 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(nonaq. electrolyte **battery** with improved low-temp. characteristics)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(12)
(2) Hitachi, M; EP 0845825 A 1998 HCAPLUS
(3) Sanyo Electric Co Ltd; JP 10188957 A 1998 HCAPLUS
(4) Sony Corp; JP 07111161 A 1995 HCAPLUS

L39 ANSWER 21 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:643403 HCAPLUS
DN 133:210709
TI **Anode active** mass for secondary **lithium batteries** and its manufacture
IN Shim, Kyu Yoon; Kim, Sang Jin; Yoon, Sang Young
PA Samsung Sdi Co., Ltd., S. Korea

SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000251895	A2	20000914	JP 2000-47339	20000224
	KR 2000056985	A	20000915	KR 1999-42681	19991004
PRAI	KR 1999-6099	A	19990224		
	KR 1999-42681	A	19991004		

AB The active mass has a coated with an amorphous carbonaceous shell contg. transition metal, metalloid, alkali metal, and/or alk. earth metal. The active mass is prepd. by mixing a precursor of an amorphous carbonaceous material with compds. of the metals; dissolving, melting, softening, or dispersing the mixt. in an org. **solvent**; and coating the soln. on cryst. and/or amorphous carbonaceous material core.
ST secondary **lithium battery anode** carbonaceous material manuf; **anode** carbonaceous material core metal contg shell
IT **Battery anodes**
(compns. and manuf. of carbon cores with metal contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and manuf. of carbon cores with metal contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)
IT 7440-42-8, Boron, uses
RL: MOA (Modifier or additive use); USES (Uses)
(compns. and manuf. of carbon cores with boron contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and manuf. of carbon cores with metal contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)
IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-98-7, Molybdenum, uses 7440-02-0, **Nickel**, uses 7440-09-7, Potassium, uses 7440-23-5, Sodium, uses 7440-31-5, Tin, uses 7440-47-3, **Chromium**, uses 7440-48-4, **Cobalt**, uses 7440-55-3, Gallium, uses 7440-70-2, Calcium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(compns. and manuf. of carbon cores with metal contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)
IT 7440-21-3, Silicon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(compns. and manuf. of carbon cores with silicon contg. amorphous carbonaceous coatings for secondary **lithium battery anodes**)

L39 ANSWER 22 OF 57 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:624981 HCAPLUS
DN 133:225557
TI High-temperature-resistant coin-type (button-type) secondary nonaqueous electrolyte **batteries**
IN Watanabe, Shunji; Onodera, Hideharu; Sakai, Tsugio
PA Seiko Instruments, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M010-40; H01M002-16; H01M004-48; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000243454	A2	20000908	JP 1999-187818	19990701
PRAI JP 1998-367881	A	19981224		

AB The **batteries** use LiCoO2 or LiNiO2 as cathode active materials and **Mo** oxide or **Fe** sulfide as **anode active** materials. Preferably, the **batteries** use nonaq. **solvents** having b.p. .gtoreq.200.degree., electrolytes of F-contg. salts, separators from glass fibers or resins having deflection temp. under load .gtoreq.230.degree., and gaskets from resins having deflection temp. under load .gtoreq.230.degree.. The **batteries** show high capacity, long cycle life, and good stability during reflow soldering on printed circuit boards, etc.
ST coin **battery** reflow soldering temp resistance; lithium **cobalt** oxide cathode coin **battery**; **nickel** lithium oxide cathode coin **battery**; molybdenum oxide **anode battery** heat resistance; iron sulfide **anode battery** heat resistance
IT Secondary **batteries**
(button-type; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT **Battery anodes**
Battery cathodes
Battery electrolytes
Gaskets
Secondary **battery** separators
(coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Secondary **batteries**
(**lithium**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Soldering
(reflow; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Polyamides, uses
Polyesters, uses
Polyimides, uses
Polymers, uses
Polythiophenylenes
RL: DEV (Device component use); USES (Uses)
(separators and gaskets; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Glass fibers, uses
RL: DEV (Device component use); USES (Uses)
(separators; coin-type secondary nonaq. electrolyte **batteries**

resistant to high temp. during reflow soldering)
IT 1313-27-5, Molybdenum oxide (MoO3), uses 1317-37-9, Iron sulfide (FeS) 12033-38-4, Molybdenum oxide (MoO2.75) 12163-73-4, Molybdenum oxide (Mo2O5) 18868-43-4, Molybdenum dioxide 61349-43-7, Molybdenum oxide (Mo3O8)
RL: DEV (Device component use); USES (Uses)
(**anode**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 12031-65-1, Lithium **nickel** oxide (linio2) 12190-79-3, **Cobalt** lithium oxide (colio2)
RL: DEV (Device component use); USES (Uses)
(cathode; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate
RL: DEV (Device component use); USES (Uses)
(electrolyte; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 25038-59-9, Poly(ethylene terephthalate), uses
RL: DEV (Device component use); USES (Uses)
(separators and gaskets; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(**solvent**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)

L39 ANSWER 23 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:624976 HCAPLUS
DN 133:225555
TI High-temperature-resistant coin-type (button-type) secondary nonaqueous electrolyte **batteries**
IN Watanabe, Shunji; Onodera, Hideharu; Sakai, Tsugio
PA Seiko Instruments, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000243445	A2	20000908	JP 1999-187817	19990701
PRAI JP 1998-367882	A	19981224		

AB The **batteries** use a cathode active material of LiMn2O4 and **anode active** materials selected from **Mo** oxide, Li titanate, **Fe** sulfide, and Nb2O5. Preferably, the **batteries** use nonaq. **solvents** having b.p. .gtoreq.200.degree., electrolytes of F-contg. salts, separators from glass fibers or resins having deflection temp. under load .gtoreq.230.degree., and gaskets from resins having deflection temp. under load .gtoreq.230.degree.. The **batteries** show high capacity, long cycle life, and good stability during reflow soldering on printed circuit boards, etc.
ST coin **battery** reflow soldering temp resistance; lithium **manganese** oxide cathode coin **battery**; molybdenum oxide

anode battery heat resistance; titanate **lithium**
anode battery heat resistance; iron sulfide
anode battery heat resistance; niobium pentoxide
anode battery heat resistance
IT Secondary **batteries**
(button-type; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT **Battery anodes**
Battery cathodes
Battery electrolytes
Gaskets
Secondary **battery** separators
(coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Secondary **batteries**
(**lithium**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Soldering
(reflow; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Polyamides, uses
Polyesters, uses
Polyimides, uses
Polymers, uses
Polythiophenylenes
RL: DEV (Device component use); USES (Uses)
(separators and gaskets; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT Glass fibers, uses
RL: DEV (Device component use); USES (Uses)
(separators; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 1313-27-5, Molybdenum oxide (MoO3), uses 1313-96-8, Niobium pentoxide 1317-37-9, Iron sulfide (FeS) 12031-95-7, Lithium titanate (Li4Ti5O12) 12033-38-4, Molybdenum oxide (MoO2.75) 12034-59-2, Niobium oxide (Nb2O4) 12163-73-4, Molybdenum oxide (Mo2O5) 18868-43-4, Molybdenum dioxide 39302-37-9, Lithium titanate 61349-43-7, Molybdenum oxide (Mo3O8)
RL: DEV (Device component use); USES (Uses)
(**anode**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 12057-17-9, Lithium **manganese** oxide (LiMn2O4)
RL: DEV (Device component use); USES (Uses)
(cathode; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate
RL: DEV (Device component use); USES (Uses)
(electrolyte; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 25038-59-9, Poly(ethylene terephthalate), uses
RL: DEV (Device component use); USES (Uses)
(separators and gaskets; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)
IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(**solvent**; coin-type secondary nonaq. electrolyte **batteries** resistant to high temp. during reflow soldering)

L39 ANSWER 24 OF 57 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:624970 HCAPLUS
DN 133:225550
TI Secondary nonaqueous electrolyte **batteries** using improved electrolyte solutions
IN Kita, Fusaji; Shinoda, Naoki
PA Hitachi Maxell, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000243439	A2	20000908	JP 1999-40940	19990219

AB The **batteries** use 4-V class or higher cathode active materials, show charging power .gtoreq.0.55 Wh/cm3, and contain F-contg. **solvents** having fluorination rate .gtoreq.50%. Preferably, the **batteries** use carbonaceous **anodes** having **active** mass d. .gtoreq.1.5 g/cm3. The **batteries** show high capacity and safety at high temp.
ST **battery** nonaq electrolyte fluorine **solvent** safety; cathode nonaq electrolyte fluorine **solvent battery**; carbonaceous **anode** fluorine **solvent** electrolyte **battery**
IT Secondary **batteries**
(**lithium**; safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)
IT **Battery anodes**
Battery cathodes
Battery electrolytes
Safety
(safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)
IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode; safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)
IT 376-84-1 138495-42-8
RL: DEV (Device component use); USES (Uses)
(safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(safety secondary nonaq. electrolyte **batteries** using F-contg. **solvents** and carbonaceous **anodes**)

L39 ANSWER 25 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:608507 HCAPLUS
DN 133:196015
TI **Anode**-active material used in **lithium** secondary **battery**
IN Kaneda, Junya; Takeuchi, Seiji; Watanabe, Noriyuki; Yamaki, Takahiro;

Muranaka, Yasushi; Aono, Yasuhisa
PA Hitachi, Ltd., Japan
SO Eur. Pat. Appl., 32 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M004-58
ICS H01M010-40; C01G031-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1032062	A1	20000830	EP 2000-102256	20000215
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000243396	A2	20000908	JP 1999-44119	19990223
KR 2000058145	A	20000925	KR 2000-8567	20000222
PRAI JP 1999-44119	A	19990223		

AB A **lithium** secondary **battery** comprising a pos. **electrode**, a neg. **electrode** contg. a lithium ion-storable/dischargeable **neg. electrode-active** material and a lithium ion conductive, nonaq. electrolytic soln. or polymer electrolyte, is characterized in that the **neg. electrode-active** material comprises particles of carbonaceous material and particles of metal and metal oxide capable of enhancing lithium ion interstitial diffusibility/releasability as embedded in the particles of carbonaceous material. The particles of carbonaceous materials and lithium ion interstitially diffusible/releasable particles are prepd. by carbonization of a mixt. thereof with MA or carbon precursor. The **battery** has a high capacity and a long cycle life, and can be used in various elec. appliances.

ST **lithium battery anode** active material

IT **Battery anodes**
Carbonization
Petroleum pitch
(**anode**-active material used in **lithium** secondary **battery**)

IT Carbon fibers, uses
Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(**anode**-active material used in **lithium** secondary **battery**)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode**-active material used in **lithium** secondary **battery**)

IT Secondary **batteries**
(**lithium**; **anode**-active material used in **lithium** secondary **battery**)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses 7782-42-5, Graphite, uses 12057-17-9, Lithium **manganese** oxide limn2o4 12190-79-3, **Cobalt** lithium oxide colio2 15773-66-7, Tin silicate snsio3 18282-10-5, Tin dioxide 21324-40-3, Lithium hexafluorophosphate 113066-89-0, **Cobalt** lithium **nickel** oxide Co0.2LiNi0.8O2 113443-18-8, Silicon oxide (SiO) 178404-39-2, Lithium **manganese** oxide Li1.09Mn1.91O4
RL: DEV (Device component use); USES (Uses)
(**anode**-active material used in **lithium** secondary **battery**)

IT 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode**-active material used in **lithium** secondary **battery**)
IT 7440-50-8, **Copper**, uses
RL: DEV (Device component use); USES (Uses)
(current collector; **anode**-active material used in **lithium** secondary **battery**)

L39 ANSWER 26 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:572540 HCAPLUS
DN 133:137815
TI Positive and **negative active** materials coated with porous polymer electrolyte for lithium ion cells
AU Suzuki, Isao; Hitomi, Shuji; Yasuda, Hideo; Yamachi, Masanori; Yagasaki, Eriko; Hashizume, Shozo
CS Nippon Denchi K.K., Japan
SO GS News Technical Report (2000), 59(1), 11-15
CODEN: GSNTAA; ISSN: 0385-7204
PB Nippon Denchi K.K.
DT Journal
LA Japanese
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
AB Electrochem. characteristics and thermostability of pos. and neg. **electrodes** using LiCoO2 and graphite active materials coated with porous polymer electrolyte (PPE) have been investigated. It was found out that the initial irreversible capacity of neg. **electrode** was reduced by half of that of **electrode** without polymer electrolyte. The thermostability of neg. **electrode** was also found out to be improved from the results of DSC measurements. Furthermore, it was proved that those active materials will be applicable to practical cells because of little decrease in discharge performance even at high rate.
ST **lithium battery electrode** polymer electrolyte coated
IT **Battery anodes**
Battery cathodes
Battery electrolytes
Polymer electrolytes
(**anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)
IT Fluoropolymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)
IT Secondary **batteries**
(**lithium**; **anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)
IT 7782-42-5, Graphite, uses 12190-79-3, **Cobalt** lithium oxide colio2
RL: DEV (Device component use); USES (Uses)
(**anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)
IT 39448-96-9, Graphite lithium
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(**anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)

IT 24937-79-9, Pvdf
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**anode** and cathode active materials coated with porous polymer electrolyte for lithium ion cells)

L39 ANSWER 27 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:493254 HCAPLUS
DN 133:107408
TI Process for producing **lithium** secondary **battery**
IN Kaneda, Junya; Watanabe, Noriyuki; Aono, Yasuhisa; Takeuchi, Seiji; Muranaka, Yasushi; Takei, Kouichi
PA Hitachi, Ltd., Japan; Hitachi Chemical Company, Ltd.
SO Eur. Pat. Appl., 25 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1020944	A2	20000719	EP 2000-100127	20000107
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	KR 2000053488	A	20000825	KR 2000-1634	20000114
	JP 2000268824	A2	20000929	JP 2000-10222	20000114
PRAI	JP 1999-7380	A	19990114		

AB A **lithium** secondary **battery**, which comprises a pos. **electrode**, a neg. **electrode** contg. a lithium ion-storable/dischargeable **neg. electrode-active** material and a lithium ion conductive, nonaq. electrolytic soln. or polymer electrolyte can have distinguished charging/discharging characteristics and a higher safety, when the neg. **electrode** material contains particles comprising carbonaceous materials and at least one of elements capable of forming a compd. with Li; the elements have a m.p. of at least 900.degree. and a thermal expansion coeff. of not more than 9 ppm/K at room temp.; the particles are embedded in a plurality of layers of the carbonaceous materials; the particles being subjected to a mech. treatment to make particle sizes of the particles smaller than the initial particle size in advance.
ST **lithium battery** fabrication; safety **lithium battery**
IT Secondary **batteries**
(**lithium**; process for producing **lithium** secondary **battery**)
IT **Battery anodes**
Coal tar pitch
Petroleum pitch
(process for producing **lithium** secondary **battery**)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(process for producing **lithium** secondary **battery**)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(process for producing **lithium** secondary **battery**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses

12057-17-9, Lithium **manganese** oxide limn2o4 12190-79-3, **Cobalt** lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 99637-69-1, Lithium **nickel** oxide lini2o4
RL: DEV (Device component use); USES (Uses)
(process for producing **lithium** secondary **battery**)

IT 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(process for producing **lithium** secondary **battery**)

IT 7440-50-8, **Copper**, uses 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(process for producing **lithium** secondary **battery**)

L39 ANSWER 28 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:474456 HCAPLUS
DN 133:76734
TI Manufacture of **anode** materials and secondary nonaqueous electrolyte **batteries** using them
IN Takahashi, Naoto; Yamashita, Hironari; Kunii, Shin
PA Tokuyama Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-04
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000195505	A2	20000714	JP 1998-369577	19981225

AB The **anode** materials are manufd. by treating raw materials with metal solns. comprising alkali metals or alk. earth metals dissolved in amine **solvents** for incorporation of the metals into the **anode** materials. The secondary nonaq. electrolyte **batteries** using the **anodes** show high capacity, low irreversible capacity, and long cycle life.

ST **battery anode** alkali metal amine **solvent**; alk earth metal **anode battery**

IT Chalcogenides
RL: DEV (Device component use); USES (Uses)
(**anode active** material; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)

IT **Battery anodes**
(**anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)

IT Alkali metals, uses
Alkaline earth metals
RL: DEV (Device component use); USES (Uses)
(**anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)

IT Secondary **batteries**
(**lithium**; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)

IT Amines, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvents**; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)
IT Silicon alloy, base
Tin alloy, base
RL: DEV (Device component use); USES (Uses)
(**anode active** material; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)
IT 409-21-2, Silicon carbide, uses 1306-19-0, Cadmium oxide, uses 1309-60-0, Lead oxide (PbO2) 1309-64-4, Antimony trioxide, uses 1314-13-2, Zinc oxide, uses 1314-95-0, Tin sulfide (SnS) 1317-36-8, Lead oxide (PbO), uses 18282-10-5, Tin oxide (SnO2) 20619-16-3, Germanium oxide (GeO) 21651-19-4, Tin oxide (SnO) 113443-18-8, Silicon monoxide
RL: DEV (Device component use); USES (Uses)
(**anode active** material; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(**anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)
IT 56339-86-7P, **Nickel** 50, tin 50 (atomic) 58500-40-6P, Silicon tin oxide
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(**anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)
IT 107-15-3, Ethylenediamine, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent**; **anodes** treated with amine solns. contg. alkali metals or alk. earth metals for secondary nonaq. electrolyte **batteries** with low irreversible capacity)

L39 ANSWER 29 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:399111 HCAPLUS
DN 133:32723
TI **Anode active** mass and its manufacture for secondary **lithium batteries**
IN Choi, Wan Wook; Shim, Kyu Yoon; Yoon, Sang Young; Yoo, Jae Yool
PA Samsung SDI Co., Ltd., S. Korea
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS C01B031-02; C01B031-04; H01M004-02; H01M004-04; H01M004-38; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000164218	A2	20000616	JP 1999-333044	19991124

	KR 2000033684	A	20000615	KR 1998-50653	19981125
	KR 2000056339	A	20000915	KR 1999-5564	19990219
	US 6391495	B1	20020521	US 1999-448315	19991123
	CN 1254961	A	20000531	CN 1999-126325	19991125
PRAI	KR 1998-50653	A	19981125		
	KR 1999-5564	A	19990219		

AB The **anode active** mass comprises cryst. graphite cores and carbon shells added with transition metals, alkali metals, alk. earth metals, Group IIIA, IVA, and/or VA metals and the carbon is selected from turbostratic C, graphite having different properties from the cores, or amorphous C. The active mass is manufd. by following steps; dissolving substances contg. transition metals, alkali metals, alk. earth metals, Group IIIA, IVA, and/or VA metals in water or org. **solvents**; mixing with carbonaceous materials selected from natural graphite, artificial graphite, cokes, soft carbon, and/or hard carbon; drying for pptg. the substances on surfaces of the carbonaceous materials; and then heating. Claimed **batteries** are equipped with **anodes** contg. the above active mass, cathodes contg. Li transition metal oxides, separators, and electrolyte solns. contg. propylene carbonate, ethylene carbonate, and Li salts. The **batteries** have large discharge capacity and long cycle life.

ST **anode** carbon core shell **lithium battery**; graphite core shell **anode** manuf **lithium battery**; transition metal carbon **anode lithium battery**; alkali metal carbon **anode lithium battery**; alk earth metal carbon **anode lithium battery**; carbon **anode** Group IIIA IVA VA **battery**

IT Alkali metals, uses
Alkaline earth metals
Group IIIA elements
Group IVA elements
Group VA elements
Transition metals, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(additives for shells; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT **Battery anodes**
(core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT Coke
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT Secondary **batteries**
(**lithium**; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT 1343-98-2, Silicic acid 10043-35-3, Boric acid, uses 13138-45-9, Nickel nitrate
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(additives for shells; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathodes; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(cores; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte **solvents**; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolytes; core/shell-type carbon and its manuf. for **anodes** in **lithium batteries**)

L39 ANSWER 30 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:362751 HCAPLUS
DN 133:7014
TI Manufacture of secondary nonaqueous-electrolyte **batteries** for suppressed elongation of **electrode** films
IN Takamori, Masayuki
PA Japan Energy K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-04
ICS H01M004-64; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000149928	A2	20000530	JP 1998-314535	19981105

AB The **batteries** are manufd. by film formation of **anode** mass and cathode mass resp. on its carrier materials having rough surfaces for laminating to give coiled **electrode** stacks. Thus, a mat surface of a **Cu** foil was coated with an **anode** mass **slurry** contg. graphite and then an **Al** foil was coated with a cathode mass **slurry** contg. LiMnO4 on its sandblasted surface. The **anode** films and cathode films are suppressed from elongation caused by lamination.

ST nonaq secondary **battery** manuf **electrode** lamination

IT Lamination
Sandblasting
(laminating active mass films on rough surfaces in manuf. of nonaq. **batteries** for suppressed elongation of **electrode** films)

IT Secondary **batteries**
(**lithium**; laminating active mass films on rough surfaces in manuf. of nonaq. **batteries** for suppressed elongation of **electrode** films)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**anodes**; laminating **active** mass films on rough surfaces in manuf. of nonaq. **batteries** for suppressed elongation of **electrode** films)

IT 7440-50-8, **Copper**, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrolytic foils, current collectors; laminating active mass films on rough surfaces in manuf. of nonaq. **batteries** for suppressed elongation of **electrode** films)

IT 7429-90-5, Aluminum, uses 12057-17-9, Lithium **manganese** oxide

(LiMn2O4)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(foils, current collectors; laminating active mass films on rough surfaces in manuf. of nonaq. **batteries** for suppressed elongation of **electrode** films)

L39 ANSWER 31 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:259913 HCAPLUS
DN 132:267630
TI **Lithium** polymer **battery** with an enhanced **anode** plate structure
IN Chang, Youn-Han; Kim, Jung-Ho
PA Samsung Display Devices Co., Ltd., S. Korea
SO Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M004-74; H01M004-66
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 994522	A2	20000419	EP 1999-308071	19991013
	EP 994522	A3	20010919		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	KR 2000025571	A	20000506	KR 1998-42711	19981013
	JP 2000123840	A2	20000428	JP 1999-284012	19991005
	CN 1257320	A	20000621	CN 1999-125272	19991013
PRAI	KR 1998-42711	A	19981013		

AB The **Li** polymer **battery** includes: a pos. plate including a pos. collector having a plurality of openings and a pos. active material layer formed on at least one surface of the pos. collector; a neg. plate including a neg. collector in a foil form, and a **neg. active** material layer formed on at least one surface of the neg. collector; and a separator between the pos. and neg. plates, for insulating the pos. and neg. plates.
ST **lithium** polymer **battery**
IT **Battery anodes**
Battery cathodes
(**lithium** polymer **battery** with enhanced **anode** plate structure)
IT Secondary **batteries**
(**lithium**; **lithium** polymer **battery** with enhanced **anode** plate structure)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(expanded metal; **lithium** polymer **battery** with enhanced **anode** plate structure)
IT 7440-50-8, **Copper**, uses
RL: DEV (Device component use); USES (Uses)
(**lithium** polymer **battery** with enhanced **anode** plate structure)

L39 ANSWER 32 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:209801 HCAPLUS
DN 132:224886
TI Lithium-ion secondary **battery** constructed of low magnetic

susceptibility materials
IN Leising, Randolph A.; Takeuchi, Esther S.; Spillman, David M.
PA Wilson Greatbatch Ltd., USA
SO Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M002-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 989624	A1	20000329	EP 1999-307455	19990921
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000100475	A2	20000407	JP 1999-267119	19990921
PRAI	US 1998-101175P	P	19980921		
	US 1998-211406	A	19981215		

AB A rechargeable alkali metal electrochem. cell, and preferably a lithium-ion secondary cell, constructed of low magnetic susceptibility materials, is described. The non-magnetic characteristics enable the secondary cell to be used within the confines of a magnetic resonance imaging system. A secondary electrochem. cell wherein the length and the width of the neg. **electrode** extend beyond the length and the width of the pos. **electrode** to provide the pos. **electrode** bounded by the neg. **electrode**. The **neg. electrode active** material includes graphite with specific characteristics.

ST **lithium battery** low magnetic susceptibility material
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT Pitch
(carbon; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT Oxides (inorganic), uses
Selenides
Sulfides, uses
Tellurides
RL: DEV (Device component use); USES (Uses)
(lithiated; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT Alkali metals, uses
Alkaline earth metals
Carbon black, uses
Coke
Group IIIB elements
RL: DEV (Device component use); USES (Uses)
(lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT Secondary **batteries**
(**lithium**; **lithium**-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT Titanium alloy
RL: DEV (Device component use); USES (Uses)
(casing; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)
IT 12597-69-2, Steel, uses

RL: DEV (Device component use); USES (Uses)
(**Ni**-plated, **anode** current collector; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 7440-02-0, **Nickel**, uses 7440-50-8, **Copper**, uses 12597-68-1, Stainless steel, uses
RL: DEV (Device component use); USES (Uses)
(**anode** current collector; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(binder; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 7440-32-6, Titanium, uses 11107-04-3 11109-50-5 11134-23-9 12611-86-8
RL: DEV (Device component use); USES (Uses)
(casing; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(cathode current collector; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 7440-44-0, Glassy carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate 7439-89-6D, Iron, chalcogenides, lithiated, uses 7439-93-2, Lithium, uses 7439-96-5D, **Manganese**, chalcogenides, lithiated, uses 7439-98-7D, Molybdenum, chalcogenides, lithiated, uses 7440-02-0D, **Nickel**, chalcogenides, lithiated, uses 7440-03-1D, Niobium, chalcogenides, lithiated, uses 7440-32-6D, Titanium, chalcogenides, lithiated, uses 7440-47-3D, **Chromium**, chalcogenides, lithiated, uses 7440-48-4D, **Cobalt**, chalcogenides, lithiated, uses 7440-50-8D, **Copper**, chalcogenides, lithiated, uses 7440-62-2D, Vanadium, chalcogenides, lithiated, uses 7782-42-5, Graphite, uses 12190-79-3, **Cobalt** lithium oxide colio2 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate
RL: DEV (Device component use); USES (Uses)
(lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium-ion secondary **battery** constructed of low magnetic susceptibility materials)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; US 101175 P 1998
(2) Anon; US 211406 1998
(3) Canon Kk; EP 0690520 A 1996 HCAPLUS
(4) Greatbatch W Ltd; EP 0870975 A 1998
(5) Nagaura Toru; US 5534369 A 1996 HCAPLUS
(6) Sony Corp; JP 01128371 A 1989 HCAPLUS
(7) Sony Corp; EP 0713258 A 1996 HCAPLUS
(8) Tanaka Mitsutoshi; US 5455128 A 1995 HCAPLUS

L39 ANSWER 33 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:34358 HCAPLUS
DN 132:66688
TI Manufacture of **slurries** for secondary **lithium battery electrodes**
IN Nagase, Ryuichi; Takamori, Masayuki
PA Japan Energy K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-04
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000012001	A2	20000114	JP 1998-292770	19981001
PRAI JP 1998-125362		19980421		

AB **Slurries** for secondary **lithium battery electrodes** are obtained by (1) forming a binder dispersion, (2) kneading a plasticizer, an **electrode** active material, an elec. conductor, and optionally the preprepd. dispersion to obtain a funicular paste, (3) addn. of the (residual) dispersion to the paste, and (4) kneading. The kneading process(es) may be carried out by using a triaxial planetary mixer. Slurries with const. viscosity are manufd. with blending less dispersants.
ST secondary **lithium battery electrode** **slurry** prepn; **slurry** funicular paste **battery electrode**; binder homodispersion **battery electrode** paste
IT Fluoropolymers, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(binder; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT Dispersion (of materials)
(homo-; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT **Battery electrodes**
Binders
Kneading
Pastes
(manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT Mixers (processing apparatus)
(triaxial planetary, kneading by; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT 67-64-1, Acetone, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(binder dispersant; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT 24937-79-9, Poly(vinylidene fluoride)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(binder; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed

binders)
IT 12057-17-9, Lithium **manganese** oxide (LiMn2O4) 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(cathode active material; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT 7782-42-5, Graphite, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(conductor and **anode active** material; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)
IT 84-74-2, Dibutyl phthalate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(plasticizer; manuf. of **slurries** for secondary **lithium battery electrodes** by kneading homo-dispersed binders)

L39 ANSWER 34 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:814704 HCAPLUS
DN 132:52418
TI Secondary **lithium batteries** using electrolyte gels and their manufacture
IN Soga, Iwao
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11354159	A2	19991224	JP 1998-174049	19980605

AB The secondary **batteries** have **anodes** and/or cathodes composed of Li+-intercalatable active substance layers on current collectors and ion-transfer phases of electrolyte gels, and electrolyte gel layers between the **electrodes**, where the differences between soly. parameters of skeletal polymers (other than gelled polymers formed by thermal polymn.) in the cathodes and **anodes** and those of **solvents** in the electrolyte solns. are .gtoreq.0.5 (cal/cm3)0.5. The manufg. process includes forming voids-contg. cathode and **anode active** material layers on current collectors by using the skeletal polymers and applying electrolyte solns. contg. thermally polymerizable monomers on the surfaces of the active material layers to fill the voids with the electrolyte solns. and to form electrolyte gels. The **batteries** have high potential, energy d., and capacity, and long cycle life.
ST **lithium battery** electrolyte gel polymer capacity; cycle life **lithium battery** electrolyte gel polymer; soly parameter **lithium battery** gel electrolyte; thermal polymn gel electrolyte **lithium battery**
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(**electrode** binder; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)
IT Secondary **batteries**

(**lithium**; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT **Battery anodes**
Battery cathodes
Battery electrolytes
(secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT 9003-17-2, Polybutadiene 9003-53-6, Polystyrene 24937-79-9, Poly(vinylidene fluoride) 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(**electrode** binder; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(in electrolyte gel; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

IT 173390-60-8P 252879-08-6P 252879-09-7P
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(in electrolyte gel; secondary **Li batteries** using electrolyte-contg. thermally polymd. gels and polymer binders for high capacity and long cycle life)

L39 ANSWER 35 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:814690 HCAPLUS
DN 132:52408
TI Secondary **lithium battery anode** **active** materials and the **batteries** using the materials
IN Yoon, Sang-Young; Chou, Jung-Joo; Yoo, Jae-Yool; Shim, We-Yoon; Choi, Wan-Wook; Kim, Sang-Jin
PA Samsung Electron Devices Co., Ltd., S. Korea
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11354122	A2	19991224	JP 1999-141893	19990521
	KR 2000019113	A	20000406	KR 1998-37047	19980908
	KR 2000019114	A	20000406	KR 1998-37048	19980908
	KR 2000073252	A	20001205	KR 1999-16441	19990508

CN 1237003 A 19991201 CN 1999-109256 19990521
PRAI KR 1998-18312 A 19980521
KR 1998-37047 A 19980908
KR 1998-37048 A 19980908
KR 1999-16441 A 19990508
AB The **anode active** materials contain cryst. C cores and amorphous C shells. Alternatively, the **anode** materials contain amorphous C-coated spherical secondary particles composed of .gtoreq.1 primary particle of cryst. C. Alternatively, the **anode** materials have 2 exothermic peaks in DSC at .ltoreq.1000.degree.. The secondary **Li batteries** contain cathodes, the **anodes** above, separators, and electrolyte solns. contg. org. **solvents** and Li salts. The **batteries** have high d. of the **electrode** plates, high-rate charge/discharge characteristics, and long life.
ST **lithium battery anode** cryst amorphous carbon
IT Secondary **batteries**
(**lithium**; secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)
IT **Battery anodes**
Battery cathodes
Battery electrolytes
Fuel cells
(secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)
IT 12031-65-1, Lithium **nickel** oxide (LiNiO2) 12057-17-9, Lithium **manganese** oxide (LiMn2O4) 12190-79-3, **Cobalt** lithium oxide (CoLiO2) 135573-53-4, **Cobalt** lithium **nickel** oxide ((**Co**,**Ni**)LiO2)
RL: DEV (Device component use); USES (Uses)
(cathode active material; secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)
IT 96-49-1, Ethylene carbonate 105-58-8 108-32-7, Propylene carbonate 109-60-4, Propyl acetate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-84-7, Propylene acetate
RL: DEV (Device component use); USES (Uses)
(electrolyte **solvent**; secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)
IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte; secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)
IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(secondary **Li batteries** using cryst. C/amorphous C composite **anode active** material)

L39 ANSWER 36 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:814078 HCAPLUS
DN 132:52402
TI Secondary **lithium batteries** using electrolyte gels and their manufacture
IN Soga, Iwao
PA Mitsubishi Chemical Industries Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11354158	A2	19991224	JP 1998-174048	19980605

AB The secondary **batteries** have **anodes** and/or cathodes composed of Li+-intercalatable active substance layers on current collectors and ion-transfer phases of electrolyte gels, and electrolyte gel layers between the **electrodes**, where the differences between soly. parameters of skeletal polymers (other than gelled polymers) in the cathodes and **anodes** and those of **solvents** in the electrolyte solns. are .gtoreq.0.2 (cal/cm3)0.5. The manufg. process includes forming voids-contg. cathode and **anode active** material layers on current collectors by using the skeletal polymers and applying electrolyte solns. on the surfaces of the active material layers to fill the voids with the electrolyte solns. and to form electrolyte gels. The **batteries** have high potential, energy d., and capacity, and long cycle life.

ST **lithium battery** electrolyte gel polymer capacity; cycle life **lithium battery** electrolyte gel polymer; soly parameter **lithium battery** gel electrolyte

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(**electrode** binder; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(in electrolyte gel; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT Secondary **batteries**
(**lithium**; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT **Battery anodes**
Battery cathodes
Battery electrolytes
(secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT 9003-53-6, Polystyrene 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); USES (Uses)
(**electrode** binder; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7791-03-9, Lithium perchlorate 9011-14-7, Poly(methyl methacrylate) 25014-41-9, Polyacrylonitrile 25322-68-3,

Polyethylene glycol
RL: DEV (Device component use); USES (Uses)
(in electrolyte gel; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)
IT 173390-60-8P
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(in electrolyte gel; secondary **Li batteries** using electrolyte gels and polymer binders for high capacity and long cycle life)

L39 ANSWER 37 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:783369 HCAPLUS
DN 132:4835
TI Manufacture of **anodes** for secondary **batteries** and the **batteries**
IN Akagi, Ryuichi; Nakanishi, Kuniyuki; Nishimura, Toru; Hirabayashi, Tadashi
PA Kao Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-04
ICS H01M004-02; H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11339778	A2	19991210	JP 1998-142962	19980525

AB The **anodes** are manufd. by mixing a **Si** contg. **anode active** mass with a binder and a **solvent** to form a **slurry**, applying the **slurry** on an org. polymer film and removing the **solvent**, and sintering the **anode active** mass and carbonizing or burning off the polymer film in a nonoxidizing atm. The **batteries** are secondary **Li batteries**.
ST secondary **lithium battery** silicon contg **anode** manuf
IT **Battery anodes**
(manuf. of silicon contg. **anodes** for secondary **lithium batteries**)
IT Polyesters, uses
RL: NUU (Other use, unclassified); USES (Uses)
(polymer film supports in manuf. of silicon contg. **anodes** for secondary **lithium batteries**)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of silicon contg. **anodes** for secondary **lithium batteries**)
IT 25038-59-9, Poly(ethylene terephthalate), uses
RL: NUU (Other use, unclassified); USES (Uses)
(polymer film supports in manuf. of silicon contg. **anodes** for secondary **lithium batteries**)

L39 ANSWER 38 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:695362 HCAPLUS
DN 131:301365
TI Introduction of positive **electrode** materials of rechargeable

lithium ion **batteries**
AU Wu, Chi-Sheng
CS SYNergy ScienTech Corp., Peop. Rep. China
SO Huaxue (1999), 57(2), 167-174
CODEN: HUHSA2; ISSN: 0441-3768
PB Chinese Chemical Society
DT Journal; General Review
LA Chinese
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
AB A review with 25 refs. The major components of a lithium ion cell include electrolyte, separator, current collectors, and pos., **neg.** **electrode active** materials, etc. The cost of the pos. material occupies 40% and 35% of the total cost for 18650 and 093448, resp. It has the highest cost among all materials. The capacity of the cell is mainly detd. by the pos. active materials. Therefore, the selection of the pos. active materials will play the most crucial role. Among all the pos. materials, the transition metal oxides are the best choice and have the best performance. The potential of the oxides, esp. LiCoO2, LiNiO2, LiNixCo1_xO2 and Li1+xMn2O4, can be even higher than 4 V., and they are better choice for the pos. active materials. The objective of this article will focus on the general characteristics, market status and future development of these oxide materials.
ST review **lithium battery** cathode
IT Transition metal oxides
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(cathode materials of rechargeable **lithium** ion **batteries**)
IT Secondary **batteries**
(**lithium**; cathode materials of rechargeable **lithium** ion **batteries**)
IT 12031-65-1, Lithium **nickel** oxide linio2 12190-79-3, **Cobalt** lithium oxide colio2 39457-42-6, Lithium **manganese** oxide 131344-56-4, **Cobalt** lithium **nickel** oxide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(cathode materials of rechargeable **lithium** ion **batteries**)

L39 ANSWER 39 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:638479 HCAPLUS
DN 131:274184
TI Secondary **lithium** ion **battery** and **slurry** for **electrodes**, binder composition, and **electrodes** for the **battery**
IN Maeda, Koichiro; Nakamura, Katsunari; Yamamoto, Haruhisa
PA Nippon Zeon Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11273682	A2	19991008	JP 1998-93968	19980323

AB The binder compn. contains (1) a polymer with gel content .gtoreq.50% and (2) liq. substances contg. N-methylpyrrolidone and an O-contg. compd. with **b**.p. 50-350.degree.. The title **slurry** contains the

binder compn. and an active material composed of carbonaceous substance and/or a mixed metal oxide. Also claimed are the **electrodes** obtained by using the **slurry** and the **battery** having the **electrodes**. The addn. of the liq. substances gives the **slurry** homogeneous compn., good coatability, and high storage stability. Since the adhesion between current collectors and the active material is strong, the **battery** shows good cycling performance.

ST **slurry electrode lithium** ion **battery**
; methylpyrrolidone binder **electrode lithium** ion **battery**; oxygen contg substance slurry **lithium** **battery**

IT **Battery anodes**
Battery cathodes
Binders
Slurries
(**slurry** binder contg. polymer, N-methylpyrrolidone, and O-contg. substance for forming **electrode** for **Li** ion **battery**)

IT 7782-42-5, KS 15, uses
RL: DEV (Device component use); USES (Uses)
(**anode active** material; **slurry** binder contg. polymer, N-methylpyrrolidone, and O-contg. substance for forming **electrode** for **Li** ion **battery**)

IT 12190-79-3, Cell Seed C 5
RL: DEV (Device component use); USES (Uses)
(cathode active material; slurry binder contg. polymer, N-methylpyrrolidone, and O-contg. substance for forming **electrode** for **Li** ion **battery**)

IT 9035-90-9P 70857-13-5P, Acrylonitrile-butadiene-itaconic acid-methyl methacrylate-styrene copolymer
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(slurry binder contg. polymer, N-methylpyrrolidone, and O-contg. substance for forming **electrode** for **Li** ion **battery**)

IT 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 79-09-4, Propionic acid, uses 79-10-7, Acrylic acid, uses 107-21-1, Ethylene glycol, uses 108-10-1, Methyl isobutyl ketone 109-99-9, Tetrahydrofuran, uses 123-91-1, 1,4-Dioxane, uses 142-96-1, Butyl ether 547-64-8, Methyl lactate 872-50-4, N-Methylpyrrolidone, uses 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(slurry binder contg. polymer, N-methylpyrrolidone, and O-contg. substance for forming **electrode** for **Li** ion **battery**)

L39 ANSWER 40 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:417540 HCAPLUS
DN 131:47145
TI Manufacture of **battery electrodes**
IN Miyahara, Hiroyuki
PA TDK Electronics Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-04
ICS H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11176425	A2	19990702	JP 1997-356139	19971209

AB The **electrodes** are prepd. by applying an active mass mixt. contg. a binder, a **solvent** and an acid on 1 side of a collector and then on the other side; where the acid content is 0.2-0.95% the wt. of solid components in the mixt. This method is esp. suitable for manuf. of secondary **Li battery anodes**.

ST **lithium battery anode** manuf acid additive

IT **Battery anodes**
(**active** mass mixts. contg. acid additives in manuf. of carbon **anodes** with **copper** collectors for secondary **lithium batteries**)

IT 7440-50-8, **Copper**, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(active mass mixts. contg. acid additives in manuf. of carbon **anodes** with **copper** collectors for secondary **lithium batteries**)

IT 64-18-6, Formic acid, uses 110-16-7, Maleic acid, uses 144-62-7, Oxalic acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(active mass mixts. contg. acid additives in manuf. of carbon **anodes** with **copper** collectors for secondary **lithium batteries**)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mesophase; active mass mixts. contg. acid additives in manuf. of carbon **anodes** with **copper** collectors for secondary **lithium batteries**)

L39 ANSWER 41 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:246656 HCAPLUS
DN 130:269619
TI Research and development on **lithium**-ion **battery** and its **electrode** active materials
AU Wu, Guoliang; Yang, Xinhe; Kan, Surong; Jin, Weihua
CS Beijing General Research Institute for Non-ferrous Metals, Beijing, 100088, Peop. Rep. China
SO Dianchi (1998), 28(6), 258-262
CODEN: DNCHEP; ISSN: 1001-1579
PB Dianchi Zazhishe
DT Journal
LA Chinese
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

AB The prepn., characteristics and application of LiCoO2 as cathode active material and composite graphite as **neg. active** material for **lithium**-ion **batteries** were introduced. The main problem on the design of **battery** structure and its safety, the choice of related materials, prodn. technique and quality controlling in manufg. of **lithium**-ion **batteries** were discussed. The characteristics of **lithium**-ion **batteries** prepd. were presented.

ST **lithium** ion **battery electrode** active material; safety **lithium** ion **battery**

IT Secondary **batteries**
(**lithium**; research and development on **lithium**-ion **battery** and its **electrode** active materials)

IT **Battery anodes**

Battery cathodes
(research and development on **lithium**-ion **battery** and its **electrode** active materials)

IT 7782-42-5, Graphite, uses 12190-79-3, **Cobalt** lithium oxide colio2
RL: DEV (Device component use); USES (Uses)
(research and development on **lithium**-ion **battery** and its **electrode** active materials)

L39 ANSWER 42 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:72207 HCAPLUS
DN 130:170707
TI **Electrodes** containing fluoropolymer binders and secondary nonaqueous electrolyte **batteries** using them
IN Ikkoku, Naomi; Saito, Masayuki; Funaki, Atsushi
PA Asahi Glass Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-62
ICS C08F214-22; C08F214-26; H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11025987	A2	19990129	JP 1997-176170	19970701

AB The **electrodes** contain active materials and binders comprising copolymers from CF2:CF2, vinylidene fluoride, propylene, and .gtoreq.1 selected from XRfCY:CH2, XRfOCF:CF2, and CF3(CF2)n[OCF(CF3)CF2]mOCF:CF2 (Y = F, H; Rf = F-substituted C2-12 divalent org. group; X = F, Cl, H; n =0-3; m = 1-4). Secondary nonaq. electrolyte **batteries** contain solns. of Li salts in Li-dissolving nonaq. **solvents**, cathodes, and **anodes**, where the cathodes and/or **anodes** contain the binders above. The **electrodes** are resistant to swelling in the electrolyte solns. and provide good adhesion between the active materials and current collectors.

ST **lithium** electrolyte **battery electrode** fluoropolymer binder; swelling resistant **electrode** fluoropolymer binder **battery**

IT Secondary **batteries**
(**lithium**; swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)

IT Coke
RL: DEV (Device component use); USES (Uses)
(needle, **anode active** material; swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)

IT **Battery anodes**
Battery cathodes
Battery electrolytes
Binders
(swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)

IT Fluoropolymers, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(swelling-resistant **electrodes** contg. fluoropolymer binders

for good adhesion in secondary nonaq. electrolyte **batteries**)
IT 12057-17-9, Lithium **manganese** oxide (LiMn2O4) 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode active material; swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)
IT 108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte **solvent**; swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)
IT 7439-93-2D, Lithium, salts, uses
RL: DEV (Device component use); USES (Uses)
(electrolyte; swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)
IT 207908-37-0
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(swelling-resistant **electrodes** contg. fluoropolymer binders for good adhesion in secondary nonaq. electrolyte **batteries**)

L39 ANSWER 43 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:32327 HCAPLUS
DN 130:141693
TI Secondary solid-electrolyte **batteries** with **electrodes** containing polymer gels
IN Amano, Kosuke; Yakata, Hiroshi
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-58; H01M004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11007981	A2	19990112	JP 1997-158555	19970616

PI
AB Claimed **batteries** use cathodes and/or **anodes** contg. polymer gels dispersed with active mass. The **batteries** provide decreased contact resistance between **electrodes** and solid electrolyte.
ST polymer gel dispersion **electrode battery**
IT **Battery anodes**
Battery cathodes
Battery electrodes
(**electrode active** mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)
IT Secondary **batteries**
(**lithium**; **electrode** active mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(matrix polymer; **electrode** active mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)
IT 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)
(**anode**; **electrode active** mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)

IT 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole 1314-62-1, Vanadium pentoxide, uses 12017-00-4, **Cobalt** dioxide 12035-36-8, **Nickel** dioxide 12057-17-9, Lithium **manganese** oxide (LiMn2O4) 12190-79-3, **Cobalt** lithium oxide (CoLiO2) 31295-41-7, 4,5-Diamino-2,6-dimercaptopyrimidine 197667-28-0, **Manganese** oxide (Mn2O4)
RL: DEV (Device component use); USES (Uses)
(cathode; **electrode** active mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Vinylidene fluoride homopolymer 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); USES (Uses)
(matrix polymer; **electrode** active mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-29-2, .gamma.-Valerolactone 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses
RL: DEV (Device component use); USES (Uses)
(**solvent**; **electrode** active mass dispersed in polymer gels for secondary solid-electrolyte **batteries**)

L39 ANSWER 44 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:466551 HCAPLUS
DN 129:97764
TI Secondary **lithium**-ion **battery**
IN Yoshida, Yasuhiro; Hamano, Kouji; Shiota, Hisashi; Shiraga, Shou; Aihara, Shigeru; Inuzuka, Takayuki; Murai, Michio
PA Mitsubishi Denki K. K., Japan
SO Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01M010-40
ICS H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 851521	A2	19980701	EP 1997-122405	19971218
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 10233232	A2	19980902	JP 1996-347600	19961226
	JP 3223824	B2	20011029		
	WO 9931748	A1	19990624	WO 1997-JP4600	19971215
	W: CN, JP, KR, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 967677	A1	19991229	EP 1997-947932	19971215
	R: DE, FR, GB				
	CN 1245591	A	20000223	CN 1997-181621	19971215
	US 6136471	A	20001024	US 1997-996037	19971222
	US 6291102	B1	20010918	US 1999-355943	19990816
PRAI	JP 1996-347600	A	19961226		
	WO 1997-JP4600	W	19971215		

AB Pos. and **neg. active** material particles are adhered to the resp. current collectors by a binder resin to prep. cathodes and **anodes**. The active material layers are adhered to a separator with the binder resin so that the interlaminar strength between each

active material layer and the separator may be not lower than that between the active material layer and the resp. current collector. The d. of the active material particles in each of the **electrode** material layers in the separator side is lower than that in the side of each current collector. The d. of the binder resin in each of the **electrode** material layers in the separator side is higher than that in the side of each current collector. A Li ion-contg. electrolytic soln. is held in voids made in the active material layers and the separator to complete an elec. connection between the **electrodes** .

ST **lithium** ion **battery electrode** adhesion

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(binder in **lithium**-ion **battery electrode** active material of defined adhesion to current collector and separator)

IT **Battery anodes**
Battery cathodes
(defined adhesion of active material to current collector and separator for lithium-ion)

IT 24937-79-9, PVDF
RL: DEV (Device component use); USES (Uses)
(binder in **lithium**-ion **battery electrode** active material of defined adhesion to current collector and separator)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(defined adhesion of active material to current collector and separator for **lithium**-ion **battery anode** of lithium-intercalatable)

IT 12190-79-3, **Cobalt** lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(defined adhesion of active material to current collector and separator for **lithium**-ion **battery** cathode of)

L39 ANSWER 45 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:325019 HCAPLUS
DN 129:17840
TI Secondary nonaqueous-electrolyte **lithium**-ion **battery** with propylene carbonate based-electrolyte
IN Barker, Jeremy; Gao, Feng
PA Valence Technology, Inc., USA; Barker, Jeremy; Gao, Feng
SO PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9820574	A1	19980514	WO 1997-US19311	19971103
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5780182	A	19980714	US 1996-742398	19961104
AU 9851943	A1	19980529	AU 1998-51943	19971103

PRAI US 1996-742398 19961104
WO 1997-US19311 19971103
AB The **battery** comprises an **anode active** material of graphite and/or coke and a binder, a cathode, and an electrolyte of LiPF6 and a **solvent** mixt. of propylene carbonate and 4,5-dichloroethylene carbonate at a 20:80 to 80:20 wt. ratio. The electrolyte further comprises a polymeric matrix. The **battery** is esp. suited for low-temp. applications. The **battery** is characterized by a 1st cycle capacity loss of .ltorsim.35%, and the **anode** is characterized by a reversible capacity of >300 mA-h/g.
ST **lithium** ion **battery** electrolyte **solvent**; propylene dichloroethylene carbonate **battery** electrolyte
IT Fluoro rubber
RL: DEV (Device component use); USES (Uses)
(hexafluoropropene-vinylidene fluoride; **lithium**-ion **battery** electrolytes contg. dichloroethylene carbonate and propylene carbonate and)
IT Secondary **batteries**
(high-performance lithium-ion)
IT **Battery** electrolytes
(propylene carbonate-based dichloroethylene carbonate-contg. lithium-ion)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**lithium**-ion **battery anodes** contg. graphite of defined crystal structure)
IT 12057-17-9, Lithium **manganese** oxide (LiMn2O4)
RL: DEV (Device component use); USES (Uses)
(**lithium**-ion **battery** cathodes)
IT 108-32-7, Propylene carbonate
RL: TEM (Technical or engineered material use); USES (Uses)
(**lithium**-ion **battery** electrolytes contg. dichloroethylene carbonate and)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 4437-85-8, Butylene carbonate
RL: TEM (Technical or engineered material use); USES (Uses)
(**lithium**-ion **battery** electrolytes contg. dichloroethylene carbonate and propylene carbonate and)
IT 3967-55-3, 1,2-Dichloroethylene carbonate
RL: TEM (Technical or engineered material use); USES (Uses)
(**lithium**-ion **battery** electrolytes contg. propylene carbonate and)

L39 ANSWER 46 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:71721 HCAPLUS
DN 128:169840
TI Nonaqueous electrolyte secondary **batteries**
IN Asaka, Emi; Koshiba, Tokiharu
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	JP 10027609	A2	19980127	JP 1996-178871	19960709

AB The **batteries** use **Li** (alloys) as **anode** **active** masses and cathode active masses contg. spinel-type Li4/3Mn5/3O. Alternatively, the **batteries** use spinel-type Li Ti oxide as **anode active** masses instead. The nonaq. electrolyte may be LiN(CF3SO2)2 and the **solvent** may be mixts. contg. ethylene carbonate, which has high viscosity, in the **batteries**. The **batteries** show improved charging-discharging performance and improved storage stability at high temp.

ST nonaq electrolyte secondary **battery**; lithium alloy **anode** **active** mass **battery**; spinel type lithium **manganese** oxide; cathode active mass nonaq electrolyte **battery**; electrolyte lithium perfluoromethylsulfonyl imide **battery**; **solvent** ethylene carbonate nonaq electrolyte **battery**

IT **Battery anodes**
Battery cathodes
Electrolytes
Secondary **batteries**
(nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass and lithium-contg. **anode active** mass)

IT lithium alloy
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode active** mass; nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass and lithium-contg. **anode active** mass)

IT 7439-93-2, Lithium, uses 12031-95-7, Lithium titanium oxide (Li4Ti5O12)
RL: TEM (Technical or engineered material use); USES (Uses)
(**anode active** mass; nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass and lithium-contg. **anode active** mass)

IT 12031-92-4, Lithium **manganese** oxide (Li4Mn5O12)
RL: TEM (Technical or engineered material use); USES (Uses)
(cathode active mass; nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass and lithium-contg. **anode active** mass)

IT 90076-65-6
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte; nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass and lithium-contg. **anode active** mass)

IT 13463-67-7, Titania, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(nonaq. electrolyte secondary **batteries** using **lithium** -contg. **anode active** mass from)

IT 1310-65-2, Lithium hydroxide 12710-12-2, **Manganese** oxyhydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass from)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane
RL: NUU (Other use, unclassified); USES (Uses)
(**solvents**; nonaq. electrolyte secondary **batteries** using spinel-type lithium **manganese** oxide cathode active mass

and lithium-contg. **anode active** mass)

L39 ANSWER 47 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:731988 HCAPLUS
DN 128:37222
TI Nonaqueous electrolyte secondary **batteries**
IN Sakamoto, Hideo; Sakai, Tsugio; Tawara, Kensuke; Iwasaki, Fumiharu; Takasugi, Shinichi; Tamachi, Tsuneaki
PA Seiko Instruments, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09293536	A2	19971111	JP 1996-105901	19960425

AB The ratio of reversible capacity of neg. **electrode** to that of pos. **electrode** of a Li nonaq. electrolyte secondary **battery** is maintained >1.05 but .ltoreq.1.30 for improved cycle life. The pos. active material of the **battery** is LiCoO2 and the **neg. active** material is SiO.
ST lithium nonaq electrolyte **battery** cycle life
IT Secondary **batteries**
(**lithium**; nonaq. electrolyte **lithium** secondary **batteries** having higher capacity at neg. **electrode** for improved cycle life)
IT 12190-79-3, **Cobalt** lithium oxide (LiCoO2) 113443-18-8, Silicon monoxide
RL: TEM (Technical or engineered material use); USES (Uses)
(nonaq. electrolyte **lithium** secondary **batteries** having higher capacity at neg. **electrode** for improved cycle life)

L39 ANSWER 48 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:424799 HCAPLUS
DN 127:53487
TI Nonaqueous electrolyte secondary **batteries** with good long cycle life
IN Hara, Mitsunori; Fukuoka, Satoru; Tsujioku, Keiichi; Yamamoto, Yuji
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M004-04; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09153361	A2	19970610	JP 1995-312348	19951130

AB Title **batteries** have **lithium** as **anode active** mass, spinel structured Li-**Mn** oxide complexes contg. Ru as cathodes, and nonaq. electrolytes. Title **batteries** have high energy d. at low cost and are suitable for portable elec. devices, communications equipments, etc.

ST nonaq electrolyte secondary **battery lithium anode**; spinal lithium magnesium oxide ruthenium cathode

IT **Battery anodes**
Battery cathodes
(nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

IT Secondary **batteries**
(nonaq. electrolyte secondary **batteries** with good long cycle life)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(**anodes**; nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

IT 12057-17-9P, Lithium **manganese** oxide (LiMn2O4)
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(cathodes; nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

IT 33454-82-9, Lithium trifluoromethanesulfonate
RL: DEV (Device component use); USES (Uses)
(electrolytes; nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

IT 1310-65-2, Lithium hydroxide 1313-13-9, **Manganese** dioxide, reactions 11113-84-1, Ruthenium oxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

IT 96-49-1, Ethylene carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, 1,2-Butylene carbonate
RL: DEV (Device component use); USES (Uses)
(**solvents** for electrolytes; nonaq. electrolyte secondary **batteries** having Ru-contg. spinal structured LiMn2O4)

L39 ANSWER 49 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:703031 HCAPLUS
DN 126:20868
TI Rechargeable **lithium battery** with inorganic electrolyte
AU Hefer, B.; Hambitzer, G.; Lutz, C.
CS Fraunhofer-Institut fuer Chemische Technologie, Pfinztal, D-76327, Germany
SO Proceedings of the Power Sources Conference (1996), 37th, 203-207
CODEN: PPOCFD
PB National Technical Information Service
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
AB An all inorg. rechargeable **lithium battery** has been built. LiCoO2 is used as the pos. mass, whereas pure lithium is used as the **active neg.** mass. No excess lithium is necessary. The electrolyte mainly contains LiAlCl4 and SO2. To understand the processes in the **battery**, electrochem. quartz crystal microbalance and impedance spectroscopy were used. The formation and subsequent cycling of a film consisting of the two redox systems Li2S2O3/Li2S4O6 and Li2S2O4/Li2S3O6 could be found when the **nickel** substrate of the neg. **electrode** is cycled in the potential range from 0 mV to 3250 mV vs. Li/Li+. Impedance spectroscopy identified the formation of a film on plated lithium. This film probably consists of Li2S2O4 and grows linear with sqrt(t). In prismatic cells with a capacity up to 2 Ah more than 80, 100% depth-of-discharge cycles between 4.5 V and 3.0 V could be reached with a capacity loss of 20%. Specific energy up to

200 Wh/kg and specific power of 1.8 kW/kg will be reached this year in prismatic cells.
ST rechargeable **lithium battery** inorg electrolyte
IT **Battery** electrolytes
Secondary **batteries**
(rechargeable **lithium battery** with inorg. electrolyte)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(**anode**; rechargeable **lithium battery** with inorg. electrolyte)
IT 12190-79-3, Cobaltate (CoO21-), lithium
RL: DEV (Device component use); USES (Uses)
(cathode; rechargeable **lithium battery** with inorg. electrolyte)
IT 7446-09-5, Sulfur dioxide, uses 14024-11-4, Lithium tetrachloroaluminate
RL: DEV (Device component use); USES (Uses)
(electrolyte contg.; rechargeable **lithium battery** with inorg. electrolyte)

L39 ANSWER 50 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:76487 HCAPLUS
DN 124:122056
TI **Lithium** secondary **battery** having improved charge-discharge characteristic and safety
IN Kubota, Tadahiko; Tanaka, Mitsutoshi
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M002-16; H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07263028	A2	19951013	JP 1994-55614	19940325
	US 5654114	A	19970805	US 1995-409045	19950323
PRAI	JP 1994-55614		19940325		

AB In a **Li** secondary **battery**, a **neg. electrode active** mass is an oxide contg. .gtoreq.1 of a Group IVA element, a Group VA element, In, Zn, and Mg, and a pos. **electrode** active mass is LixCoy1My2Oz, where M is **Ni**, V, **Fe**, **Mn**, Ti, or **Cu**; y1 = 0.75-1.0; yr2 = 0-0.25; yr1 + y2 = 1; x = 0.7-1.2, and z = 1.5-3.0. In the pos. **electrode** active mass, the av. diam of particles D is 3<D.ltoreq.9.0 .mu.m, and the vol. ratio of particles having a diam. of 3-150 .mu.m is .gtoreq.75%. The preferred pos. **electrode** active mass contains Sn oxides. The **battery** has improved charge-discharge characteristic and safety.
ST **lithium** secondary **battery** safety
IT Safety
(**lithium** secondary **battery** having improved charge-discharge characteristic and safety)
IT **Batteries**, secondary
(**lithium**, having improved charge-discharge characteristic and safety)
IT 1304-76-3, Bismuth oxide (Bi2O3), uses 1309-60-0, Lead oxide (PbO2) 1309-64-4, Antimony oxide (Sb2O3), uses 1310-53-8, Germanium oxide

(GeO2), uses 1314-41-6, Lead oxide (Pb3O4) 1317-36-8, Lead oxide (PbO), uses 1332-81-6, Antimony oxide (Sb2O4) 12055-92-4, Indium lithium oxide (InLi3O3) 12188-25-9, Lithium tin oxide (Li2SnO3) 12315-28-5, Germanium Lithium oxide (GeLi2O3) 12344-15-9, Lithium tin oxide (Li8SnO6) 12399-16-5, Lithium tin zinc oxide (Li2Sn2ZnO6) 15593-40-5, Antimony lithium oxide (SbLi3O4) 15773-66-7, Tin silicate (SnSiO3) 18282-10-5, Tin oxide (SnO2) 20619-16-3, Germanium oxide (GeO) 21651-19-4, Tin oxide (SnO) 37356-04-0, Lithium zinc oxide (Li2ZnO2) 53570-15-3 55128-56-8, Lithium tin oxide (Li6SnO5) 167994-75-4, Lithium tin oxide (Li0.1SnO2.05) 167994-88-9, Bismuth lithium oxide (BiLi3O4) 170232-57-2, Lithium tin oxide (Li0.5SnO2.25) 170232-58-3, Lithium tin oxide (Li4SnO4) 170232-60-7, Lithium tin oxide (Li0.1SnO1.05) 170232-61-8, Lithium tin oxide (Li0.5SnO1.25) 170232-62-9, Lithium tin oxide (LiSnO2.5) 170232-64-1, Lithium tin oxide (Li8SnO5) 172972-03-1, Lithium tin oxide (Li2SnO2)
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mass, in **lithium** secondary **battery** having improved charge-discharge characteristic and safety)

IT 12190-79-3, **Cobalt** lithium oxide (LiCoO2) 173049-91-7, **Cobalt** lithium oxide (CoLi0.97O1.7-2.3) 173049-92-8, **Cobalt** lithium **nickel** oxide (Co0.9LiNi0.1O1.7-2.3) 173049-93-9, **Cobalt** lithium vanadium oxide (Co0.95LiV0.05O1.7-2.3) 173049-94-0, **Cobalt** lithium vanadium oxide (Co0.98LiV0.02O1.7-2.3) 173049-95-1, **Cobalt** iron lithium oxide (Co0.75Fe0.25LiO1.7-2.3) 173049-96-2, **Cobalt** lithium **manganese** oxide (Co0.75LiMn0.25O1.7-2.3) 173049-97-3, **Cobalt** lithium **manganese** oxide (Co0.85LiMn0.15O1.7-2.3) 173049-98-4, **Cobalt** lithium **manganese** oxide (Co0.95LiMn0.05O1.7-2.3) 173049-99-5, **Cobalt** lithium **manganese** oxide (Co0.97Li1.02Mn0.03O1.7-2.3) 173050-00-5, **Cobalt** lithium titanium oxide (Co0.97LiTi0.03O1.7-2.3) 173050-01-6, **Cobalt copper** lithium oxide (Co0.97Cu0.03LiO1.7-2.3)
RL: DEV (Device component use); USES (Uses)
(pos. **electrode** active mass, in **lithium** secondary **battery** having improved charge-discharge characteristic and safety)

L39 ANSWER 51 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:767557 HCAPLUS
DN 123:148993
TI Nonaqueous electrolyte secondary **battery** having **lithium** **manganese** oxide as a positive **electrode** active mass
IN Myasaka, Tsutomu; Kagawa, Okimasa
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-02; H01M004-50; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07130395	A2	19950519	JP 1993-273809	19931101

PI JP 07130395 A2 19950519 JP 1993-273809 19931101
AB A **Li** ion **battery** comprises a **neg.** **electrode active** mass of a Li-contg. transition metal oxide the crystal structure of which changes in the initial introduction

of Li ions and then remains unchanged in subsequent charging-discharging and a pos. **electrode** active mass of Li1+xMn2-yO4 (0.1toreq.x<1.7; 0<y<0.7) having spinel structure. The preferred **neg. electrode active** mass is LixMOj (where M is Ti, V, **Mn**, **Co**, **Fe**, **Ni**, Nb, and/or **Mo**; x = 0.17-11.25; and j = 1.6-4.1),. The preferred electrolytes for the **battery** are propylene carbonate, ethylene carbonate, di-Et carbonate, and Me propionate.

ST lithium **manganese** oxide cathode **battery**; nonaq electrolyte secondary **battery**

IT **Batteries**, secondary
(nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 554-12-1, Methyl propionate
RL: DEV (Device component use); USES (Uses)
(electrolyte; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 13568-36-0, Lithium **nickel** vanadium oxide (LiNiVO4) 161913-50-4, **Cobalt** lithium titanium vanadium oxide (CoLi1.03Ti0.1V0.98O4.2) 161913-52-6, **Cobalt** lithium **manganese** vanadium oxide (CoLi1.03Mn0.1V0.98O4.2) 161913-55-9, **Cobalt** lithium tungsten vanadium oxide (CoLi1.03W0.1V0.98O4.3) 161913-56-0, **Cobalt** lithium tin vanadium oxide (CoLi1.03Sn0.1V0.99O4.2) 163157-17-3, **Cobalt** lithium **nickel** vanadium oxide (Co0.6Li1.01Ni0.4V0.99O3.9) 163157-21-9, **Chromium cobalt** lithium vanadium oxide (Cr0.1CoLi1.03V0.98O4.6) 163157-22-0, **Cobalt** iron lithium vanadium oxide (CoFe0.1Li1.03V0.98O4.2) 163157-23-1, **Cobalt** lithium niobium vanadium oxide (CoLi1.03Nb0.1V0.98O4.3) 167162-85-8, **Cobalt** lithium molybdenum vanadium oxide (Co0.5Li0.01Mo0.1V0.89O4.3) 167162-86-9, Antimony **cobalt** lithium vanadium oxide (Sb0.1CoLi1.03V0.98O4.3)
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mass; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 12031-92-4, Lithium **manganese** oxide (Li4Mn5O12) 127575-11-5, Lithium **manganese** oxide (Li2Mn4O9) 167163-14-6, Lithium **manganese** oxide (Li2Mn5O11) 167163-15-7, Lithium **manganese** oxide (Li0.5Mn1.88O4) 167163-16-8, Lithium **manganese** oxide (Li0.46Mn1.89O4)
RL: DEV (Device component use); USES (Uses)
(pos. **electrode** active mass; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

L39 ANSWER 52 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:767548 HCAPLUS
DN 123:148988
TI Nonaqueous electrolyte secondary **battery** having **lithium manganese** oxide as a positive **electrode** active mass
IN Myasaka, Tsutomu
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40

ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07122299	A2	19950512	JP 1993-263699	19931021

AB A **Li** ion **battery** comprises a **neg. electrode active** mass of a transition metal oxide and a pos. **electrode** active mass of Li1+xMn2-yAzO4 (-1.0<x<1.7; 0<y<1.2, 0.02<z<1.0; A is a metal) having spinel structure. The preferred **neg. electrode active** mass is LixMOj (where M is Ti, V, **Mn**, **Co**, **Fe**, **Ni**, Nb, and/or **Mo**; x = 0.17-11.25; and j = 1.6-4.1), the crystal structure of which changes in the initial introduction of Li ions and then remains unchanged in subsequent charging-discharging. The preferred electrolytes for the **battery** are propylene carbonate, ethylene carbonate, di-Et carbonate, and Me propionate.

ST lithium **manganese** oxide cathode **battery**; nonaq electrolyte secondary **battery**

IT **Batteries**, secondary
(nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 554-12-1, Methyl propionate
RL: DEV (Device component use); USES (Uses)
(electrolyte; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 13568-36-0, Lithium **nickel** vanadium oxide (LiNiVO4) 161913-50-4, **Cobalt** lithium titanium vanadium oxide (CoLi1.03Ti0.1V0.9804.2) 161913-52-6, **Cobalt** lithium **manganese** vanadium oxide (CoLi1.03Mn0.1V0.9804.2) 161913-55-9, **Cobalt** lithium tungsten vanadium oxide (CoLi1.03W0.1V0.9804.3) 161913-56-0, **Cobalt** lithium tin vanadium oxide (CoLi1.03Sn0.1V0.9904.2) 163157-17-3, **Cobalt** lithium **nickel** vanadium oxide (Co0.6Li1.01Ni0.4V0.9903.9) 163157-21-9, **Chromium cobalt** lithium vanadium oxide (Cr0.1CoLi1.03V0.9804.6) 163157-22-0, **Cobalt** iron lithium vanadium oxide (CoFe0.1Li1.03V0.9804.2) 163157-23-1, **Cobalt** lithium niobium vanadium oxide (CoLi1.03Nb0.1V0.9804.3) 167162-85-8, **Cobalt** lithium molybdenum vanadium oxide (Co0.5Li0.01Mo0.1V0.8904.3) 167162-86-9, Antimony **cobalt** lithium vanadium oxide (Sb0.1CoLi1.03V0.9804.3) 167162-87-0, Lithium titanium oxide (LiTiO2.3)
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mass; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 13596-51-5, **Cobalt** lithium vanadium oxide (CoLiVO4)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

IT 167162-88-1, **Cobalt** lithium **manganese** oxide (Co0.5Li2Mn3.509) 167162-89-2, Germanium lithium **manganese** oxide (Ge0.05Li0.9Mn2.9504) 167162-90-5, **Cobalt** lithium **manganese** oxide (Co0.5Li2Mn4.5011) 167162-91-6, Lithium **manganese nickel** oxide (Li2Mn4.5Ni0.5011) 167162-92-7, **Cobalt** lithium **manganese** oxide (Co0.5Li4Mn4.5012) 167162-93-8, **Cobalt** lithium **manganese** titanium oxide (Co0.4Li4Mn4.5Ti0.1012) 167162-94-9, **Chromium** lithium

manganese oxide (Cr0.2Li1.05Mn1.8O4) 167162-95-0, Iron lithium **manganese** oxide (Fe0.2Li0.95Mn1.7O4) 167162-96-1, Lithium **manganese** vanadium oxide (Li1.05Mn1.8V0.1O4) 167162-97-2, Lithium **manganese** scandium oxide (Li0.98Mn1.7Sc0.3O4) 167162-98-3, Lithium **manganese** molybdenum oxide (Li1.03Mn1.8Mo0.1O4) 167162-99-4, Lithium **manganese** tungsten oxide (Li0.97Mn1.8W0.3O4) 167163-00-0, Germanium lithium **manganese** oxide (Ge0.03Li0.9Mn1.95O4) 167163-01-1, Germanium lithium **manganese** oxide (Ge0.45Li0.9Mn1.5O4) 167163-02-2, Lithium **manganese** titanium oxide (Li0.9Mn1.95Ti0.03O4) 167163-03-3, Lithium **manganese** titanium oxide (Li0.9Mn1.5Ti0.45O4) 167163-04-4, **Cobalt** lithium **manganese** oxide (CoLi2Mn4O11) 167163-05-5, **Chromium** lithium **manganese** oxide (Cr0.2Li0.9Mn1.7O4) 167163-06-6, **Chromium** lithium **manganese** oxide (Cr0.5Li2Mn4.5O11) 167163-07-7, Germanium lithium **manganese** oxide (Ge0.5Li2Mn4.5O11) 167163-08-8, Iron lithium **manganese** oxide (Fe0.2Li1.05Mn1.8O4)
RL: DEV (Device component use); USES (Uses)
(pos. **electrode** active mass; nonaq. electrolyte secondary **battery** having **lithium manganese** oxide as a pos. **electrode** active mass)

L39 ANSWER 53 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:767547 HCAPLUS
DN 123:148987
TI Method for charging and discharging of nonaqueous secondary **battery**
IN Yasunami, Shoichiro
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-40
ICS H01M004-58; H01M010-44
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07122298	A2	19950512	JP 1993-263696	19931021

AB The invention process is suitable for charging-discharging nonaq. secondary **batteries** using a **neg. electrode active** mass from LixMOj (where M is Ti, V, **Mn, Co, Fe, Ni**, Nb, and/or **Mo**; x = 0.17-11.25; and j = 1.6-4.1) and a pos. **electrode** active mass from LiyNOz (where N is **Co, Mn, Ni**, V, and/or **Fe**; y = 0.2-1.2; and z = 1.4-3). The charging end voltage is 3.5-4.7 V and the discharging is conducted to 0.5-1.5 V. The **neg. electrode active** mass is a transition metal oxide in which the base crystal structure is changed by the introduction of Li ions, but remains unchanged in charging-discharging. The invention charging-discharging method provides for improved cycling characteristic.
ST lithium transition metal oxide **battery**; charging discharging **lithium** secondary **battery**
IT **Batteries**, secondary
(having neg. **electrode** from lithium-contg. transition metal oxide; method for charging and discharging of nonaq. secondary **battery**)

IT 146956-50-5, **Cobalt** lithium vanadium oxide
RL: DEV (Device component use); USES (Uses)
(**neg. electrode active** mass; method for charging and discharging of nonaq. secondary **battery**)
IT 12031-65-1, Lithium **nickel** oxide (LiNiO2) 12190-79-3, Lithium **cobalt** oxide (LiCoO2) 101920-93-8, **Cobalt** lithium **nickel** oxide (Co0.5LiNi0.5O2) 167162-84-7, **Cobalt** lithium vanadium oxide (Co0.95LiV0.05O2.05)
RL: DEV (Device component use); USES (Uses)
(pos. **electrode** active mass; method for charging and discharging of nonaq. secondary **battery**)

L39 ANSWER 54 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:444244 HCAPLUS
DN 122:192491
TI Nonaqueous secondary **lithium battery**
IN Mishima, Masayuki
PA Fuji Photo Film Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06349491	A2	19941222	JP 1993-134574	19930604

AB The **battery** has a **neg. active** material selected from MaVbMocOd, NeVfMogOh, N2V2MoiOj, NV2MokOm, and N3V2MonOp, where M is selected from transition metals other than **Mo** and V, Ca and Mg; N from Ca, Mg, Cd, **Co**, **Ni**, **Cu**, **Mn** and Zn; a = 1-11; b = 1-6; c/b .ltoreq.2; d = 3-40; e = 1-11; f = 1-6; g/f .ltoreq.2; h = 3-40; i .ltoreq.4; j = 7-19; k .ltoreq.4; m = 6-18; n .ltoreq.4; and p = 8-20. The **battery** has high voltage under load, large discharge capacity and good charge-discharge behavior.
ST nonaq secondary **lithium battery**; composite oxide **neg active** material
IT **Anodes**
(composite oxide for **neg. active** materials of nonaq. secondary **lithium battery**)
IT 13550-42-0, Calcium vanadium oxide (Ca3V2O8) 13568-63-3, Magnesium vanadium oxide (Mg2V2O7) 13568-68-8, Magnesium vanadium oxide (Mg3V2O8) 13573-13-2, Magnesium vanadium oxide (MgV2O6) 14065-97-5, Calcium vanadium oxide (Ca2V2O7) 14100-64-2, Calcium vanadium oxide (CaV2O6) 14958-34-0, **Copper** vanadium oxide (CuV2O6) 14958-35-1, **Copper** vanadium oxide (Cu2V2O7) 14958-36-2, **Copper** vanadium oxide (Cu3V2O8) 14986-94-8, **Manganese** vanadium oxide (MnV2O6) 14986-95-9, **Manganese** vanadium oxide (Mn2V2O7) 15190-64-4, **Manganese** vanadium oxide (Mn3V2O8) 15469-59-7, Vanadium zinc oxide (V2ZnO6) 15469-60-0, Vanadium zinc oxide (Zn3V2O8) 15578-31-1, Vanadium zinc oxide (V2Zn2O7) 15607-56-4, **Cobalt** vanadium oxide (CoV2O6) 16056-72-7, Cadmium vanadium oxide (CdV2O6) 17622-84-3, Cadmium vanadium oxide (Cd2V2O7) 20619-24-3, **Nickel** vanadium oxide (Ni3V2O8) 21057-09-0, **Cobalt** vanadium oxide (Co3V2O8) 22640-52-4, Cadmium vanadium oxide (Cd3V2O8) 40573-22-6, **Nickel** vanadium oxide (Ni2V2O7) 52107-29-6, **Cobalt** vanadium oxide (Co2V2O7) 52502-12-2, **Nickel** vanadium oxide (NiV2O6)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(composite oxide for **neg. active** materials of nonaq. secondary **lithium battery**)
IT 7439-98-7, Molybdenum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(doping element in composite oxide; composite oxide for **neg. active** materials of nonaq. secondary **lithium battery**)

L39 ANSWER 55 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1990:65278 HCAPLUS
DN 112:65278
TI Cells containing solvated electron lithium negative **electrodes**
AU Uribe, Francisco A.; Semkow, Krystyna W.; Sammells, Anthony F.
CS Eltron Res., Inc., Aurora, IL, 60504, USA
SO J. Electrochem. Soc. (1989), 136(12), 3559-65
CODEN: JESOAN; ISSN: 0013-4651
DT Journal
LA English
CC 72-2 (Electrochemistry)
Section cross-reference(s): 52
AB Preliminary work performed on a novel solvated electron Li neg. **electrode** is discussed, which may have application in either high energy-d. secondary or reserve **battery** systems. The studied **electrode** consisted of Li initially dissolved in liq. NH3 to give a solvated electron soln. Containment of this liq. **neg. active** material from direct contact with a liq. nonaq. electrolyte present in the cell's pos. **electrode** compartment was addressed by using a Li-intercalated, electronically conducting, ceramic membrane of the general compn. LixWO2 ($0.1 < x < 1.0$). Secondary electrochem. cells having the general configuration Li,NH3/LixWO2/NAE/TiS2 using nonaq. electrolytes (NAE) based upon both propylene carbonate and 2-methyltetrahydrofuran are described. Depending upon initial Li activity in the neg. **electrode** compartments, the cell possessed an initial open-circuit potential (OCP) of 2.1-2.5 V. Cells were also prepd. using SO2,CuCl2 as the pos. electroactive material (OCP 3.44 V). Both cells, which were operated at ambient pressure (low temp.) and ambient temp. (high pressure), showed evidence of electrochem. reversibility.
ST solvated electron neg **electrode battery**; lithium liq ammonia cathode; nonaq electrolyte open circuit potential
IT Electron, solvated
(in **batteries**, with **lithium** in ammonia)
IT Cathodes
(solvated electron lithium neg.)
IT **Batteries**, secondary
(solvated electrons in ammonia for)
IT Electric potential
(open-circuit, of system contg. solvated electron lithium neg. **electrode**)
IT 7440-44-0, Carbon, uses and miscellaneous
RL: USES (Uses)
(**anode**, in electrolytic cell with solvated electron lithium neg. **electrode**)
IT 12039-13-3, Titanium disulfide
RL: PRP (Properties)
(**electrode**, in electrolytic cell, with solvated electron lithium neg. cathode)
IT 7439-93-2, Lithium, uses and miscellaneous
RL: USES (Uses)

(**electrode**, with solvated electrons in liq. ammonia)
IT 125123-55-9P, Lithium tungsten oxide (Li0.4WO2) 125123-56-0P, Lithium tungstate (Li0.35WO2) 125123-57-1P, Lithium tungstate (Li0.14WO2) 125123-58-2P, Lithium tungsten oxide (Li0.1-1WO2)
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in electrolytic cell with solvated electron lithium neg. **electrode**)
IT 7446-09-5, Sulfur dioxide, uses and miscellaneous 7447-39-4, **Copper** dichloride, uses and miscellaneous
RL: USES (Uses)
(in electrolytic cell with solvated electron lithium neg. cathode)
IT 75-05-8, Acetonitrile, uses and miscellaneous 96-47-9, 2-Methyltetrahydrofuran
RL: USES (Uses)
(in electrolytic cell with solvated electron lithium neg. **electrode**)
IT 29935-35-1, Lithium hexafluoroarsenate
RL: PRP (Properties)
(in electrolytic cell with solvated electron lithium neg. **electrode**)
IT 33454-82-9, Lithium trifluoromethanesulfonate
RL: PRP (Properties)
(in org. solvent, with solvated electron lithium neg. **electrode** in electrolytic cell)
IT 7664-41-7, Ammonia, properties
RL: PRP (Properties)
(solvated electrons in, with lithium neg. **electrode** in electrolytic cell)

L39 ANSWER 56 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1983:134299 HCAPLUS
DN 98:134299
TI **Batteries** containing a solid electrolyte made up of a cation-conductive vitreous composition
IN Duchange, Jean Pierre; Gabano, Jean Paul
PA Gipelec S. A., Fr.
SO Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DT Patent
LA French
IC H01M006-18; H01M004-36; H01M004-58
CC 72-3 (Electrochemistry)
Section cross-reference(s): 52, 57
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 68307	A1	19830105	EP 1982-105276	19820616
	EP 68307	B1	19860716		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	FR 2508239	A2	19821224	FR 1981-11902	19810617
	FR 2508239	B2	19840824		
	FR 2508240	A1	19821224	FR 1981-11903	19810617
	US 4444857	A	19840424	US 1982-386228	19820608
	JP 58001974	A2	19830107	JP 1982-103671	19820616
	IL 66068	A1	19850630	IL 1982-66068	19820616
	AT 20790	E	19860815	AT 1982-105276	19820616
PRAI	FR 1981-11902		19810617		
	FR 1981-11903		19810617		
	EP 1982-105276		19820616		

AB **Batteries** are described in which the **neg**.

active material (**anode**) is based on Li, where the electrolyte is a cation-conductive vitreous compn. corresponding to the formulas: a P2S5, b Li2S, c LiX, in which a, b and c represent nos. chosen so that b/(a + b) is 0.61-0.70 and c/(a + b + c) is less than or equal to a limit corresponding to the soly. in the vitreous phase of LiX in the compds. a P2S5 and b Li2S, where X is Cl, Br or I. The pos. active material (cathode) is in the form of a compressed powder and consists of .gtoreq.1 compd. selected from the following group: (CF)x, Cu4O(PO4)2, V6O13, V2S5, MoS3, CuS, S, CuO, Cu3B2O6, FeS2, Pb3O4, Bi2O3, PbO, BiO(CrO4)2, AgBi(CrO4)2, I2, MoO3, WO3, TiS2, NiPS3 and a bismuthate of **Cu** or Pb, the particles of electrolyte being dispersed in the midst of the active material. The sp. capacity (A-h/cm3) and initial voltage (in V) with respect to Li are tabulated for these materials. For example, the cathode materials may be composed of CuBi2O4.0.7SiO2 68, solid electrolyte, (0.18 P2S5 + 0.37 Li2S + 0.45 LiI) 25, and graphite 7%.

ST **battery** solid electrolyte vitreous material

IT **Batteries**, primary
(solid electrolyte of cation-conductive vitreous compn. for)

IT 7439-93-2, uses and miscellaneous
RL: USES (Uses)
(**anode**, for **batteries** with solid electrolyte of cation-conductive vitreous compn.)

IT 12068-85-8 67115-40-6
RL: PRP (Properties)
(**battery** cathode active material contg.)

IT 1314-80-3D, solid solns. with lithium iodide and **lithium** sulfide
10377-51-2D, solid solns. with lithium sulfide and phosphorus sulfide
12136-58-2D, solid solns. with lithium iodide and phosphorus sulfide
RL: PRP (Properties)
(**battery** solid electrolyte)

IT 12039-13-3
RL: PRP (Properties)
(**battery** solid electrolyte contg.)

IT 7631-86-9, uses and miscellaneous
RL: USES (Uses)
(cathode contg. bismuth **copper** oxide and, for **battery** with solid electrolyte of cation-conductive vitreous compn.)

IT 39368-32-6
RL: PRP (Properties)
(cathode contg. silica and, for **battery** with solid electrolyte of cation-conductive vitreous compn.)

IT 7782-42-5, uses and miscellaneous
RL: USES (Uses)
(in **batteries** with solid electrolyte of cation-conductive vitreous compn.)

L39 ANSWER 57 OF 57 HCAPLUS COPYRIGHT 2002 ACS
AN 1980:483627 HCAPLUS
DN 93:83627
TI Primary **battery**
IN Tamura, Kohki; Kahara, Toshiki; Horiba, Tatsuo; Ebato, Noboru; Asai, Osamu
PA Hitachi Chemical Co., Ltd., Japan; Hitachi, Ltd.
SO Ger. Offen., 15 pp.
CODEN: GWXXBX
DT Patent
LA German
IC H01M006-14
CC 72-2 (Electrochemistry)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	DE 2937285	A1	19800327	DE 1979-2937285	19790914
	DE 2937285	C2	19840628		
	JP 55039146	A2	19800318	JP 1978-112222	19780914
	JP 61017102	B4	19860506		
	US 4259415	A	19810331	US 1979-74522	19790911
PRAI	JP 1978-112222		19780914		

AB A button-type **battery** with high-energy d. suitable for wrist-watches and calculators is described. A **battery** 20 mm in diam. and 4 mm high has as **neg. active** material Li, along with a mixt. of MnO2 90, C powder 5, and binder (PTFE) 5%. The separator was polypropylene fiber (nonwoven) and was impregnated with a LiClO4 soln. in propylene carbonate. Another pos. active material is V2O5 or PbO.

ST **battery** primary org electrolyte lithium; lead oxide primary **battery lithium**; vanadium oxide primary **battery lithium**; **manganese** oxide primary **battery lithium**

IT Electrolytic depolarizers
(**manganese** oxide, in lithium org. electrolyte **batteries**)

IT Polypropene fibers, uses and miscellaneous
RL: USES (Uses)
(separator, for lithium org. electrolyte **battery**)

IT **Batteries**, primary
(button-type, lithium, with org. electrolyte, with oxide pos. active material)

IT 7439-93-2, uses and miscellaneous
RL: USES (Uses)
(**anodes**, in org. electrolyte **battery** with oxide pos. active materials)

IT 9002-84-0
RL: PRP (Properties)
(binder, for cathodes for lithium org. electrolyte **battery**)

IT 1314-62-1, uses and miscellaneous 1317-36-8, uses and miscellaneous
RL: USES (Uses)
(cathode, in lithium org. electrolyte **battery**)

IT 7440-44-0, uses and miscellaneous
RL: DEV (Device component use); USES (Uses)
(cathodes contg., for lithium org. electrolyte **battery**)